COMPUTERWORLD

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NEWSPAPER

Wide World Photo

The Survivors

A microcomputer-based network has helped reunite Vietnamese 'boat people' with their families in the U.S. and abroad. Story on Page 9.

Starting Salaries Found High; Hikes Slower

By Ann Dooley
CW Staff

NEW YORK — Starting salaries will cuntinue to be high for computer professionals even though the rate of increase has dropped slightly from last year.

According to an employment survey by Robert Half, Inc., a nationwide recruitment firm, starting salaries for computer professionals will increase 7.7% in 1981, a slight decline from the 8.1% increase of 1980.

Systems analysts and DP directors in medium installations and programmers and programmer/analysts in small shops will experience the most spectacular salary growth, outdistancing the gains of other computer job holders, according to the survey. The survey findings are taken from the jub opening requests

(Continued on Page 8)

Data Base System Runs as Back End And Net Manager

RAMSEY, N.J. — Digital American Computers, Inc. (DAC) here introduced an IBM-compatible dual-purpose data base machine designed to function as both a back-end data processor and a packetized communications manager.

The Meganet Machine currently interfaces to IBM 360, 370, 4300 and Series 30 mainframes under OS/VS or DOS at a channel-to-channel level at a maximum transfer rate of

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Litigation Likely

Cobol-80 Opposition Grows

By Rita Shoor
CW Staff

SANTA TERESA, Calif. — More large users are joining in a chorus against some of the Cobol-80 standards now being considered by the American National Standards Institute (Ansi) X3J4 committee.

They join Travelers Insurance Companies executive J.T. Brophy in his strongly negative reaction to it; although most had not thought in terms of a class action suit against individual X3J4 committee members [CW, Jan. 26].

The director of systems at one East Coast bank described himself as "very opposed" to the proposed standard. "There are probably thousands of programs that use the [new] reserved words," he said while speculating that X3J4 must be 'under some kind of impression that everyone has [IBM] Time-Sharing Option [TSO] terminals and can make global changes [to source code]."

Large installations already have enough expenses like operating systems conversions from MVT to MVS "without messing around with Cobol programs," the irate user continued. He also indicated that his organization might get involved in the potential Travelers litigation if necessary. "I can t understand the reasoning

(Continued on Page 4)

Wide World Photo

Raiders 27, DP 0

"If you want me to say that predicting a game with or without a computer is meaningless, I will be the first to agree."
— NFL Computer Prognosticator Bud Goode

By Bruce Hoard
CW Staff

LOS ANGELES — Thank goodness *Computerworld* readers aren't heavy bettors. If they were, and if they had based their bets on Bud Goode's Philadelphia-over-Oakland Super Bowl pick in this space Jan. 19, they would have lost their shirts.

Like a lot of other experts, Goode got caught with his readouts down when the Raiders ripped the Eagles 27-10 in Super Bowl XV. Unlike many of those experts, he didn't have any

(Continued on Page 5)

NAS Offers Dual CPU To Rival 3081

By Jeffry Beeler
CW West Coast Bureau

PALO ALTO, Calif. — National Advanced Systems Corp. (NAS), responding to IBM's 3081 and seeking to anticipate future H series announcements, last week extended its high-end systems line with a processor that reportedly averages 80% greater performance than the firm's previous biggest mainframe.

Known as the AS/9000 Dual Processor Complex (DPC), the latest NAS offering qualifies as the second member of the company's AS/9000 series of large-scale CPUs. Depending on the application, operating system and other variables, the AS/9000 DPC delivers anywhere from 70% to 90% greater computing power than its only sister system — the AS/9000 processor, an NAS spokesman said.

Last week's announcement also resulted in several major

(Continued on Page 6)

Woman Manager Feels 'Power' Not Dirty Word

By Rita Shoor
CW Staff

SCHAUMBURG, Ill. — "Power isn't a dirty word," according to Linda Phillips, director of management information systems (MIS) for the Admiral Division of Magic Chef, Inc. here. "There's nothing wrong with being assertive," said the woman in charge of all MIS-related activities within the organization.

Phillips is one of the relatively few women who have made the jump from a position of a working supervisor or project leader to one that is totally administrative. However, she feels that most women in DP have not developed the competitive desire to make the same type of move.

Although more women are beginning to move out of the analytical and technical ranks into first-line supervisory positions, Phillips contended there are still very few female managers, considering the number of women in the information management industry.

"There is less discrimination in DP than in other fields," she said, "but it still exists" and a plethora of "old-line" men still regard women as good programmer/analysts without ever viewing them as potential managers, according to Phillips.

"You've got to tell people you've done a good job," she advised. "If you

(Continued on Page 6)

Linda Phillips

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IBM to Pay $17.7 Million

Greyhound vs. IBM Suit Settled

ARMONK, N.Y. — One of the longest running antitrust suits against IBM has been settled out of court, with IBM agreeing to pay $17.7 million in legal costs to Greyhound Computer Co.

Shortly before a second trial of the suit was to have begun last week in federal court in Phoenix, the two companies announced they had reached a settlement, ending Greyhound's pursuit of IBM in state and federal courts since 1969. Under terms of the settlement, Greyhound has withdrawn its suit "with prejudice," which means the suit cannot be brought again.

Greyhound initially filed suit against IBM in late 1969, contending that IBM monopolized the computer leasing industry and sought to make purchase of computer equipment by lessors economically unattractive through the use of the fixed-term plan, discontinuance of technological discounts, increase of lease/purchase ratio and unbundling.

The suit was dismissed by the judge in a directed verdict in favor of IBM even before the firm made its defense before the six-person jury. The judge ruled that there was not enough evidence to support Greyhound's charges against IBM.

Greyhound appealed the district court's decision in 1974 and three years later an appeals court ordered a new trial on most of the original charges. The appeals court found that although Greyhound had failed to prove that the fixed term plan was not a reasonable response to competition, a jury could have found the other actions either intentionally or unintentionally anticompetitive.

IBM subsequently filed a brief with the Supreme Court appealing the ruling for a new trial on the basis that such a decision intimidates competition and burdens lower courts. The Supreme Court denied IBM's motion in January 1978 and the wheels remained in place for the new trial to begin.

According to a joint release from IBM and Greyhound, the companies settled the case to avoid further legal costs. The retrial had been expected to last several months and there was the possibility of subsequent appeals. In view of that prospect, IBM paid to Greyhound $17.7 million, which was intended to cover a portion of Greyhound's legal costs.

Specialized Carriers Ask Reagan To Hold Off on AT&T Settlement

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — The Reagan administration should not approve settlement of its antitrust case against AT&T without further consideration, even if it means going ahead with the trial. That's the gist of a letter sent last week to the President's chief adviser, Edwin Meese III, by Herb Jasper, chief Washington spokesman for the nation's specialized carriers.

Jasper, executive director of the Ad Hoc Committee for Competitive Telecommunications (ACCT), a specialized carrier trade association, also told the Justice Department his group was "at a loss to understand" why the government is willing to settle the case on the terms reported in the press [CW, Jan. 26].

Specifically, Jasper objected to letting the phone company offer long-distance communication services through a separate subsidiary, ACCT has insisted for a long time that these activities must be divested by AT&T — transferred to a separate, independently managed and financed organization; otherwise, the phone company's ability to "behave anticompetitively" will not be reduced.

If the Justice Department does not insist on divestiture of AT&T's long-distance services and facilities, it will be a "total departure from the position the department advocated in numerous congressional hearings last year," added Jasper, whose comments were contained in a letter to Assistant Attorney General Sanford M. Litvack.

"We realize that we will have an opportunity to comment on any proposed decree before it [becomes final]," Jasper said; "however, we think that any action by you to support inadequate provisions will inevitably color the subsequent debate in Congress [on new communications policy legislation] and at the Federal Communications Commission (FCC) [on pending regulatory proceedings]. Accordingly, we think it would be a great disservice for you to propose such a decree, even if the competitors and consumers should ultimately be successful in persuading [AT&T Trial Judge Harold H. Greene] to disapprove the proposal."

In his letter to Meese, Jasper urged that "the administration withold approval of the proposed settlement arrangement . . . until it has an adequate opportunity to review the record."

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INAUGURAL

What will President SyncSort do in the first hundred days?

Call (201) 568-9700.

For answers to sorting questions.

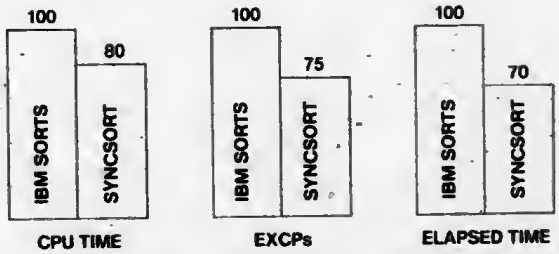
Ever since we revealed that SyncSort got 69% of the vote in the last IDC sort survey, our phones have never stopped ringing

The media have beseiged us with questions of national sorting importance. Reporters have even lain in wait for our children—as they went to school or ballet class—to ask for intimate details about SyncSort family life!

Well, we have now decided to answer the most important of these questions firmly, clearly and unequivocally:

1. WILL WE DECLARE A NATIONAL SORTING EMERGENCY? No. The nation is sorting better today than it ever has before, since so many of the country's OS and DOS processors are switching to SyncSort.

We shall continue our efforts to make those technological breakthroughs that have won us so many votes with "the efficient sorting majority." And we shall continue to stress, as we did in the campaign, that SyncSort does a lot more sorting work for a lot fewer resources:



2. WILL WE SUPPORT A REDUCED WORK WEEK FOR PROGRAMMERS? Definitely. We have always tried to "take sorting off the programmer's back" through such labor-saving OS or DOS features and facilities as.

- INCLUDE/OMIT—chooses records to be sorted.
- SUM—summarizes designated numeric fields.
- INREC/OUTREC—reformats records on input and output, with numeric data converted to printable ZD format
- OUTFIL Report Writer—produces a report divided into logical pages with headings, pagination, and dating.

In typical selection-report applications or modifications, a job that would take five days using a programming language can be done by SyncSort in just one day.

3. WILL WE SUPPORT TELEPHONE CONTROL? No. We believe it is every sort-user's constitutional right to call his vendor, and get a just and speedy answer to his sorting problem. We shall be an open-administration. Eighty-five per cent of all SyncSort users' requests for assistance are now resolved within 24 hours. We will try to make that even better!

4. DO WE INTEND TO REDECORATE THE SORTING WHITE HOUSE? No. We shall make every effort to maintain the historic integrity of this fine old house in Englewood Cliffs. "The Sorting Capital of the Whole Wide World." However, we shall make one small change on the historic marker outside. We intend to make it read, "Washington slept here—but only after a full day's work on SyncSort."

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Cobol-80 Opposition Snowballing

(Continued from Page 1)

of the committee," he said.

The new reserved words bothered another user, who wished to remain anonymous. He indicated that he wasn't concerned by items such as the deletion of the ALTER statement since standards at his installation forbade using that verb. But the reserved words could be a problem, he said.

Irv Hammer, director of computer operations at Chicago-based Montgomery Ward, wasn't familiar with the proposed standards. But, there is normally a vehicle that provides an opportunity for formal response from the users via an open platform, he said.

X3J4 Response

X3J4 Chairman James T. Panttaja was contacted at IBM's laboratory here. He confirmed that many similar comments have come in from Cobol users. Large installations seem particularly concerned about the incompatibilities between Cobol-74 and the proposed new standard and there is some justification for this concern, according to Panttaja.

In a Jan. 23 communication to *Computerworld*, Panttaja wrote, "We understand Mr. Brophy's concern about the compatibility problem, and we're working to minimize the problem. The [X3J4] committee is structured to assess differing points of view and to attempt to resolve them."

Pointing out that the standard is in a state of flux, he noted that several significant changes have taken place since the last status report was released in June 1980. This Cobol Information Bulletin (CIB) is available for public review, he said. Designated CIB 19, it is to be considered a working document that may or may not reflect the final changes to Cobol-74.

"The committee does receive letters commenting on the revision, particularly based on CIB 18 and CIB 19," chairman Panttaja continued.

These letters are logged in at the Washington, D.C. headquarters of the Computer and Business Equipment Manufacturers Association (Cbema) and then forwarded to the X3J4 committee, he explained. Committee members are charged with reviewing every letter received and then formulating "some sort of response" to each one of them.

"Based on such input . . . X3J4 began a detailed review in January 1980 of the incompatibilities in the committee's working document," he wrote. "As a result of this activity, many incompatibilities have been resolved" (see story on Page 5).

"Compatibility has been, and will continue to be, a significant consideration in X3J4's standard revision process," he continued.

"There are, however, certain instances where X3J4 has found that compatibility is not desirable or possible.

One example cited was that the order of execution on connected conditions within a hierarchical level was not specified in the earlier standard.

CIB 19 pins down the order of execution as going from left to right and terminating when true value is determined, he explained. Since this is probably not the interpretation chosen in every Cobol installation, at least some users may not be pleased with the resolution of this particular ambiguity.

In addition, "the language must sometimes be changed to incorporate new capabilities," he noted. However, "we continuously review areas of incompatibility and are making every effort to minimize them."

Formal Review

Again stressing the fluid nature of CIB 19, Panttaja noted that the committee's approval cycle includes a four-month public review period in accordance with Ansi procedures.

The formal review has not started yet since it must be preceded by a letter ballot of the 22-member X3J4 committee that results in a two-thirds vote in favor of the proposed standard.

This letter ballot was scheduled to be mailed at the end of January and 30 days are allowed for committee members to vote. Assuming that the standard receives the required majority vote, it will be reviewed by the X3 parent committee which will make the final determination of its readiness for public review.

Although the final standard — whenever it goes into effect — will "identify all substantive changes" from Cobol-74, it will not include any specific recommendations for the conversion process, Panttaja said.

Cobol users who wish to provide input to the X3J4 committee should address their comments and suggestions to J.T. Panttaja, Chairman X3J4, Cbema, Suite 1200, 1828 L St. N.W., Washington, D.C. 20036.

TRANSITIONAL CANDIDATES

1) **Seventy-seven levels in the nucleus module may be deleted,** *CIB 19*, 6.t.1
2) **INSPECT statement containing both a TALLYING and a REPLACING phrase may not be allowed,** *CIB 19*, 6 t.5
3) **ACCESS MODE, RECORD KEY, ALTERNATE RECORD KEY and FILE STATUS clauses may be taken out of the Select statement and placed in the File Description entry of the Data Division,** *CIB 19*, 6.2.1
4) **LABEL RECORDS clause may be deleted,** *CIB 19*, 6.2.2
5) **DATA RECORDS clause in the File Description may be deleted,** *CIB 19*, 6.2.3
6) **VALUE OF clause in the File Description may be deleted,** *CIB* t9, 6.2.4
7) **ON OVERFLOW phrase of the CALL statement may be replaced by the ON EXCEPTION phrase,** *CIB 19*, 6.3.1
8)* **RECORD CONTAINS integer to integer CHARACTERS**
9)* **MULTIPLE FILE clause**
10)* **STOP literal statement**

MOST SEVERE PROGRAM CHANGES

1) **Fifty-six words have been added to the Cobol reserved word list. These include:**
ALPHABET, ALPHANUMERIC, ALPHANUMERIC EDITED, ANY, COMMON, CONTENT, CONTINUE, CONVERSION, CONVERTING, CURRENT, DAY-OF-WEEK, DUPLICATE, EMPTY, END-ADD, END-CALL, END-COMPUTE, END-DELETE, END-DIVIDE, END-EVALUATE, END-IF, END-MULTIPLY, END-PERFORM, END-READ, END-RECEIVE, END-RETURN, END-REWRITE, END-SEARCH, END-START, END-STRING, END-SUBTRACT, END-UNSTRING, END-WRITE, EVALUATE, EXTERNAL, FALSE, GLOBAL, INITIALIZE, LOCALLY, LD, NUMERIC-EDITED, ORDER, OTHER, OWNER, PADDING, PURGE, READY, REALM, REALMS, RECONNECT, REFERENCE, REFERENCE-MODIFIER, REPLACE, STANDARD-2, TEST, THEN, TRUE
2) **Paragraph headers,** *CIB 19*, 5.1.3.2
Comment entries and the following paragraphs from the Identification Division are deleted. Author, Installation, Date-Written and Date-Compiled.
3) **Figurative constant ALL 'literals,'** *CIB 19*, 5.1.8
The Figurative constant ALL 'literals' cannot be associated with a numeric or numeric edited data item. This includes the VALUE clause for initialization and an elementary move statement where the sending item is ALL literals and the receiving item is numeric or numeric edited. When the figurative constant ALL literal is not associated with a data item, the length of the literal represented by the ALL 'literal' is the length of the 'literal'. In Cobol 74 the length of a figurative constant, not associated with a data item, is one character, i.e., for Cobol 74 ALL ABC would be treated as one character in length, with a value of 'A'. The revised standard will treat it as three characters in length with a value of "ABC."
4) **ALTER statement,** *CIB 19*, 5.1.13
The ALTER statement has been deleted.
5) **Fixed/variable length records,** *CIB 19*, 5.2.2
Variable length records can be explicitly defined. The RECORD clause of the File Description entry can be used to specify the maximum and minimum length of the records associated with a given file. Additionally a Working Storage data item is used to indicate to the Input/Output Control System the length of the current record to be written. For input, it contains the length of the current record that was the last record read by the Input/Output Control System. The RECORD CONTAINS clause has been modified such that if it is not present, fixed-length records will be written based on the length of the longest record. The RECORD CONTAINS clause in Cobol 74 was essentially documentation since the length of the records for a file were determined from a government description of each record

PROBABLY SEVERE PROGRAM CHANGES

1) **Comment entries,** *CIB 19*, 5 t 3.1
Comment entries have been deleted from the Identification Division in favor of the more versatile comment line (i.e.,* in the indicator area).
2) **Conditional expressions-order of execution,** *CIB 19*, 5.1.9
Connected conditions within a hierarchical level are evaluated in order from left to right and terminates when true value is determined. In *X3.23-1974*, the order was not specified
3) **ENTER statement,** *CIB 19*, 5.1.14
Deleted.
4) **RERUN statement,** *CIB 19*, 5.2.4
The file-name (or associated records) named in the ON file-name phrase cannot be referenced in a CLOSE, MERGE, OPEN, READ, REWRITE, SORT or WRITE statement.
5) **Write advancing page/end-of-page.** *CIB 19*, 5.2.5
The ADVANCING PAGE and END-OF-PAGE phrases cannot be specified in the same WRITE statement for a printer destined file.

NOT VERY SEVERE PROGRAM CHANGES

1) **MEMORY SIZE clause of the OBJECT-COMPUTER paragraph deleted,** *CIB 19*, 5.1.4
2) **ALPHABET now required before alphabet-name in the General Format of the Special-Names Paragraph,** *CIB 19*, 5.1.5
3) **Alternate currency symbol cannot use a figurative constant,** *CIB 19*, 5.1.6
4) **INSPECT and STRING statements order of execution for subscripts is specified,** *CIB 19*, 5.1.10
5) **UNSTRING statement subscripts for the delimiter identifiers are evaluated once immediately before examination,** *CIB 19*, 5.t.t0
6) **Alphabetic test includes lower case letters as alphabetic,** *CIB 19*, 5.1.11
7) **I/O modules status keys have been expanded to include new codes,** *CIB 19*, 5.2.3
05 — Indicates that the file referenced in an OPEN statement was not available at the time of the execution of that statement.
t0 — No next logical record exists in the file for the sequential read previously executed.
t5 — Indicates an optional file is not present.
16 — Indicates the Next Record Pointer was not established prior to a READ NEXT statement having been executed for that file.
8) **Some additional file status values have been defined.**
9) **All files on a Multiple File Tape must have the same labeling conventions, i.e., Standard or Omitted,** *CIB 19*, 5.2.5
10) **A SORT/MERGE file may not be specified as being contained on a multiple file tape,** *CIB 19*, 5.2.5
11) **NO REWIND clause of the CLOSE statement cannot be used with REEL/UNIT option,** *CIB 19*, 5.2.6
12) **REVERSED phrase of OPEN statement is deleted,** *CIB 19*, 5.2.7
13) **I-O/EXTEND option of OPEN statement causes a nonexisting file to be created,** *CIB 19*, 5.2.7
14) **Independent segments in segmentation module deleted,** *CIB 19*, 5.3.1
15) **No two files in a MERGE may be specified in SAME (SORT/MERGE) AREA clause in the I-O-CONTROL paragraph. The SAME AREA clause allows input-output areas/buffers to be shared by two or more files,** *CIB 19*, 5.4.1
16) **MERGE ... GIVING files (output from the MERGE statement) may be specified in a SAME RECORD AREA clause. This causes the name files to share the same current record area, e.g., the 01 entry,** *CIB 19*, 5.4.1
17) **Programs dependent on the record description of DEBUG-ITEM will be affected if programmer moves DEBUG-ITEM to a different record for further processing,** *CIB 19*, 5.5.1
18) **Data-names named in the USING phrase must not contain a REDEFINES clause,** *CIB 19*, 5.6.1
19) **Status key associated with Communication Module has been expanded to include new codes,** *CIB 19*, 5.7.1
15 — One or more queues or destinations already enabled.
21 — Symbolic source is unknown.
65 — Output queue capacity exceeded
70 — One or more destinations do not have partial messages associated with them. Action completed for other destinations.
80 — A combination of at least two status key conditions t0, 15 or 20 have occurred.
9X — Implementor-defined status.
20) **to SEND statement, semantic change for indicator values other than 0, 1, 2, 3. In Cobol 74, these values would have been interpreted as zero,** *CIB 19*, 5.7.2
21) **Description of file I-O based on the Current Record Pointer has been changed to Next Record Pointer,** *CIB 19*, 5.2.t
22) **No more substitution of double characters for missing Cobol characters if computer character set is less,** *CIB 19*, 5.1.1

* These statements have been added to the list of transitional candidates since the publication of CIB 19.

Proposed Cobol-80 Standards as of Jan. 31

Part of 'Working Document'

Reserved Word List Cut in Cobol-80 Changes

By Rita Shoor
CW Staff

SANTA TERESA, Calif. — The number of reserved words added to Cobol-80 in June 1980 have been cut by 40% — and that is only one of the changes that the American National Standards Institute's (Ansi) X3J4 Cobol committee has made in the proposed standard.

The Cobol Information Bulletin (CIB) describing the proposed standard was called "a working document" by James T. Panttaja, X3J4 chairman. Based upon the changes made to CIB 19 since it was published, he wasn't speaking in jest.

The chart listing the major elements in the Cobol-80 standard as of January 1981 incorporates changes that would affect existing programs as specified in CIB 19 and any additions or deletions to the list that have taken place since the CIB went to press.

Classification of the elements into threecategories — most severe, probably severe and not very severe — is arbitrary and follows Ardyn E. Dubnow's breakdown in an October 1980 issue of *Data Management*. It should be kept in mind that the assignment of a severity factor is only meant to serve as a guide, Dubnow, the Data Processing Management Association's (DPMA) principal representative on X3J4, noted. The effect of the changes is obviously dependent on the Cobol rules currently followed in each individual installation.

Transitional Candidates

Transitional candidates, defined by Panttaja as items that will be included in Cobol-80 but will probably disappear in the Ansi standard that follows Cobol-80, i.e., 1986, are also listed in the chart.

The following items have been dropped or changed since CIB 19 came out, according to Panttaja:

- The list of 93 reserved words has been cut to 56. Most of the words that disappeared were tied to the optional data base Cobol module that is no longer part of Cobol-80.
- The RECORD CONTAINS integer-to-integer CHARACTERS clause has been moved to the transitional category.
- The definition of arithmetic computation as specified in Cobol-74 will not change. CIB 19 had specified that intermediate, internal arithmetic would be 18 digits with a floating decimal point.
- Incompatibilities with respect to the OCCURS DEPENDING ON clause have been resolved.
- Status key value 13 — no next logical record exists in the file for the sequential read previously executed — has been changed to 10.
- Picture character "A", the category of ALPHABETIC, the RENAMES clause and the CORRESPONDING phrase of the ADD, MOVE and SUBTRACT statement have been removed from the transitional candidate list.

Anyone interested in this area may obtain a copy of CIB 19 by writing to Ansi at 1430 Broadway, New York, N.Y. 10018. It costs $16.50, and a check and mailing label must be included with the order.

Raiders Win, But DP Loses

(Continued from Page 1)

money riding on the outcome. As he has said in the past, "I don't gamble and I don't incite to gamble."

The statistics wizard had the Eagles by 5.5 points over Oakland on Super Sunday. Despite the rather dramatic setback, he remains faithful to his weekly, computer-aided football rating service.

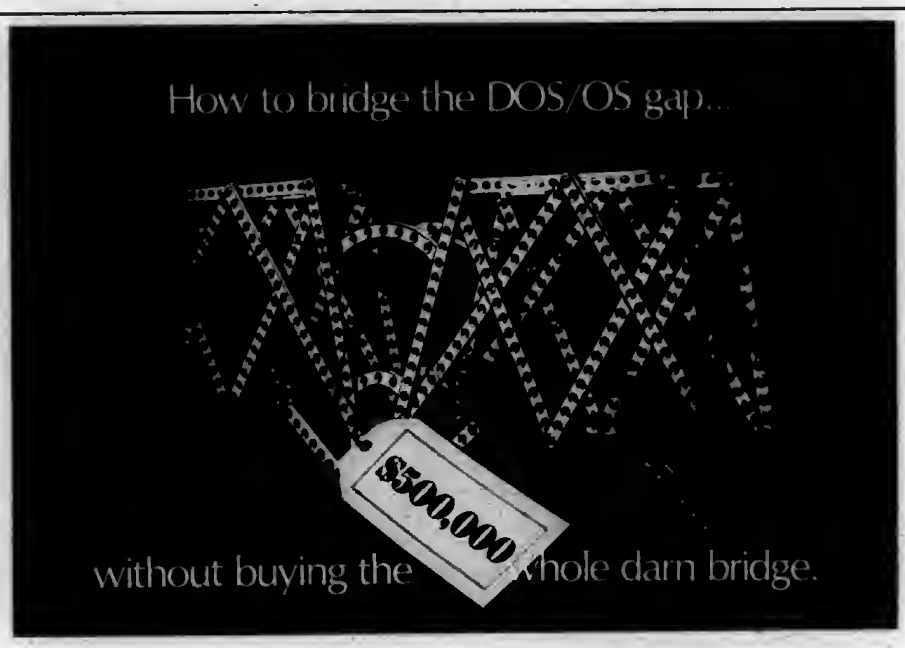
Pragmatic is the word for Goode. For him, the Eagles' loss can be summed up by looking at the statistical story of the day — interceptions. "If you look at the statistics," he explained, "you'll find that the three interceptions, each of which is worth five points in the winning margin, just about accounted for the loss."

He displayed a keen sense of hindsight but dubious impartiality in analyzing the Raider upset. "It would have been a different game if we had not been," he said, pausing to correct himself, "if the *Eagles* had not been intercepted on that first pass."

It is these quirky, illogical and aberrant deviations that wreak havoc with Goode's numbers. The Sperry Univac 1106 he depends on to crunch out his weekly 60-page reports to several NFL head coaches just can't digest what he calls "the human factor."

Although he can't computerize concepts like emotion and momentum, the Californian recognizes them as potent forces. "In my opinion, the psychology of the game is 20% of the game," he said. "And those aren't my words, those are Chuck Knox's (Buffalo Bills head coach) words."

"I'm a guy who just takes the numbers, puts 'em in the hardware, runs them through a statistical package and says, hey, look at this." There just wasn't much for the Eagles to look at on Super Bowl Sunday, though. As Goode put it, "The stats just weren't there. They just got outplayed."



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NAS Brings Out Dual Processor to Rival 3081

(Continued from Page 1)

changes and improvements to the AS/9000 itself. The changes include an expansion of the system's main memory and channel capacity, an extension of the product's warranty from three months to a year and the addition of two enhancements — a data-streaming support and an MVS/SP-assist feature.

Capacity Upgrade

The latest capacity improvements mean that the AS/9000, which used to be limited to 16 channels and 16M bytes of main memory, can now accommodate up to 24 channels and 32M bytes when running under MVS/SP, the spokesman said.

But even in its expanded configuration, the AS/9000 still falls short of the capacity of the just-announced AS/-9000DPC, which NAS claims to have introduced in anticipation of IBM's next suspected H series offering. NAS credits the DPC with providing "significantly more" throughput than the already-introduced 3081, although the extent of the purported performance edge has yet to be quantified in benchmark tests.

Deliveries of the AS/9000DPC are slated to begin during the fourth quarter, roughly the same time that IBM is expected to ship its first 3081.

As its name suggests, the AS/-9000DPC consists basically of two AS/9000 uniprocessors lashed together in a tightly coupled configuration that "looks" and acts like a single CPU to the accompanying systems software. The two processors can also be physically separated and operated independently to allow different applications to be performed concurrently, the spokesman explained.

When working in a tightly coupled mode, the DPC's two constituent processors abut each other and are connected entirely through cabling. Unlike some other multiprocessor configurations, the latest NAS large-scale system requires no other intervening hardware to achieve a tight mainframe-to-mainframe link, the source added.

Hitachi Foundation

The AS/9000DPC's foundation is formed by two Hitachi Ltd. M-200H mainframes, which NAS has turned into AS/9000s by adding enhancements that ensure compatiblity with IBM's two dual-processing operating systems, MVS/SP and VM/370.

An existing AS/9000 can be field-upgraded to an AS/9000DPC through the relatively simple addition of a second uniprocessor, the spokesman said.

A minimum AS/9000DPC configuration incorporates a 16M-byte main memory with 16 channels and expands in 4M-byte increments to a maximum of 32M bytes and 32 channels. Each 4M-byte memory increment reportedly costs $140,000.

Because the AS/9000DPC is basically a dual-processor version of the AS/9000 uniprocessor, both members of NAS' high-end systems line boast practically the same hardware technology and are identical in memory-cycle times, machine-cycle times and other key performance specifications. The two systems differ in processing power only because the larger model incorporates one more CPU than its smaller companion.

Both systems also accommodate the same hardware enhancements, including the recently added data-streaming support the MVS/SP-assist features. Implemented in hardware and microcode, the MVS/SP-assist is said to resemble the Model 3033 extension feature in function and to give users access to four capabilities:

- Cross-memory services, which trim computing overhead.
- Auxiliary storage paging, which reportedly streamlines paging operations.
- Real-storage management features.
- An aid that speeds instruction processing by offloading I/O tasks from the mainframe to the channels.

Together, these four capabilities yield improved performance for any AS/9000 or AS/9000DPC running under the control of MVS/SP Release 3 or subsequent versions, the spokesman said. How much an AS/9000-series machine stands to gain from the MVS/SP-assist feature depends on several variables, including the I/O mix, application load and instruction mix.

Shipments of the MVS/SP-assist feature begin during the first quarter of next year, whereas the AS/9000's expanded main memory, extended-channel capability and data-streaming capability will become available no later than the following quarter.

An AS/9000DPC ranges in cost from about $5.56 million to $6.51 million, depending on main-memory size and channel capacity. Like the latest enhancements to the existing AS/9000, the DPC is available from NAS at 3145 Porter Drive, Palo Alto, Calif. 94304.

Woman Manager: 'Power' No Dirty Word

(Continued from Page 1)

do a good job and sit in a corner, that's where you'll stay."

When she attained the MIS directorship in March 1979, she brought some 12 years of heavy technical and supervisory experience to the job.

Graduating from the University of Wisconsin with a bachelor's degree in marketing in 1966, Phillips was quickly made aware of the fact that a female with a marketing degree at that time was a rarity.

It was impossible to obtain a job interview through executive search firms in the Chicago area without a degree in physics or engineering, she said. Since "I wasn't a secretary and didn't type," she accepted a programmer trainee position with Northwest Computer Services, Inc., a subsidiary of Northwest Bankcorp in Minneapolis. Money was the primary motivation, she said.

Although initially trained in Cobol, she became the only PL/I programmer in a shop of some 125 technicians because of a special assignment to develop a tailored data base system for the firm.

Phillips' next assignment was as project leader for Northwest's payroll/-personnel system.

When she took over the job, her sole knowledge about payroll processing consisted of "I got a paycheck and that's about all." However, in approximately 30 months, her three-person team converted from DOS to OS and totally reorganized the system to access some 800 customer files rather than processing three very large masterfiles.

While acknowledging that it was a big job for that staff Phillips has "never been big on a lot of people." This attitude is evident in her present position, too. Contrary to the popular concept that a large staff means a better power base, she reduced her original 60-person staff at Admiral to 37 people in less than two years through attrition and layoffs. "I've never believed in a big staff," she said.

Short-Term Move

In 1974, she accepted a position as manager of payroll/personnel systems for Evans Products in Portland, Ore. — a move that lasted eight months. As often happens within DP organizations, she never really worked in that position and actually wound up taking care of accounts payable and receivable systems for the firm's corporate offices in Minneapolis. Again, the application was new to her and the assigned staff was relatively small. It included "six or seven people" in the accounting and DP areas, she recalled.

Phillips put her newly acquired knowledge to work for Kimberly-Clark in January 1975 when she was hired as a manager in the financial area. After supervising a nine-person staff who installed a customized general ledger package, she "got fed up with DP."

Everything seemed to be "horribly expensive" and the programmers and analysts in most organizations had little regard for end-user needs, she reasoned. "MIS is a support function," but that is only true if the DP staff recognizes its position as a service department within the company, she said.

Feeling that "if you couldn't change [DP] from within, do it from without," Phillips joined corporate Rockwell International in Pittsburgh in July 1976 as a senior EDP auditor. History repeated itself when she was sent to Rockwell's Admiral division as a technical specialist rather than an auditor.

The assignment involved her first exposure to minicomputers and the success the installation team enjoyed with Microdata Corp. minis solved some of the problems she had had about accepting the expense of large DP application systems. It was estimated that the interactive order-entry system would take about one and a half years to install — it took some four and a half months, she said.

After functioning as a project leader for approximately two years, Phillips received her current title and became a truly administrative manager for the first time in her career. Although several of her former positions included salary reviews and prospective employee interviews, budget responsibility only became hers when she became the director of MIS reporting to Admiral's vice-president of finance.

One of the major changes she has implemented has been converting what was essentially a large-mainframe shop including an IBM 370/145 in-house and an off-site Model 158 to an all Prime [Computer, Inc.] installation. Her style includes cutting in-house staff and utilizing more contract services with an emphasis on purchased software packages. And, her own supervisory team includes four women — one of them the manager of computer operations.

Price of Success

There is, naturally, a price to be paid for success such as Phillips has enjoyed. "Your personal life has to be second" and there must be a total commitment to the job, she noted. DP is like any other profession in that one must be known as an achiever and as someone really willing to put forth extra effort." Unfortunately, generating this profile can involve longer hours in DP than in other professions.

She also indicated that as a high-level manager, she does not work with many women. Most vendors are men and the professional conferences are male-oriented.

She recommended groups such as the International Organization of Women Executives (IOWE) for providing the opportunity to meet other women in executive positions. "We're in a man's world and there has to be an understanding of how the game is played," she said.

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Ardent computer products

DAC Offers Data Base Machine

(Continued from Page 1)

8M byte/sec, according to Peter L. Richards, DAC president.

This means that the data base machine operates in transparent mode and appears to those IBM operating systems as a mass storage device, he explained.

The hardware is controlled by the Action Operating System (Acos), a data base management system (DBMS) specifically designed to work with the "completely optimized" data base machine, he claimed.

Described as "a high-level transaction processing language," experienced programmers can supposedly work with Acos an hour after their initial exposure to it, Richards maintained. Junior programmers whose previous experience has been confined to college-level program development can also begin interactive programming relatively quickly because of the short Acos learning curve.

Said to be optimized for high response speed, the data base machine allows any single record up to a maximum of 500G-bytes to be accessed with one disk seek. Typical processing rates are from 240- to 500 transaction/sec on Meganet Machine models I and II and from 500- to 3,000 transaction/sec on a Model III.

The Model I offers up to 4M-byte addressing, with maximum addressing of 8M bytes and 16M-bytes on the models II and III, respectively.

The Acos high-level user-friendly retrieval language is supported by a real-time report generator that permits "unlimited" simultaneous queries from programmers and nontechnical end users, a spokesman continued.

'Relational DBMS'

Described as a "relational DBMS," Acos places no limit on the maximum number of records per relation. The number of data bases on each machine and maximum number of relations or files per data base are only limited by the amount of available disk storage, he said.

The DBMS has both hierarchical and inverted characteristics, and the application programmer can supposedly organize the data in either structure or "some combination of both" to meet his specific requirements, Richards claimed.

Sixty-four fields, or domains, are allowed on each record with the maximum number of bytes per domain set at 1,024 and the maximum record width defined as 65,545 bytes, according to the firm.

All data is processed as 8-bit character strings in Ascii format with strings used in a context that demands a numeric value being interpreted as numbers.

When functioning as a network communications manager, the data base machine operates in packet-switching mode with 128 bytes to 4,096 bytes allowed in each packet.

Data is transmitted either locally or on a remote basis from CPU-to-CPU via high-speed data paths, the firm said. In local network configurations, the communications software allows different devices to be attached to the data base machine through a high-bandwidth multipoint ring arrangement.

Service and support for the data base machine is available from DAC with remote diagnostic support over telephone lines, Richards said.

Future Enhancements

Although current offerings include only an IBM interface, future plans call for developing interfaces and software compatible with Control Data Corp.'s Cyber series computers and the Sperry Univac 1100 computers.

The basic hardware configuration includes a control processor, Acos supervisor memory card, transaction cache memory that is sized according to the expected number of transaction/sec, a mass storage I/O processor, console monitor CRT terminal, asynchronous communications adapter and one buffered selector channel operating at 8M byte/sec burst read mode and 5.71M byte/sec burst write mode.

Options include additional user cache memory in 256K-byte increments to a maximum of 16M byte/control processor serial I/O lines, selector channels, a multiple star switch controller, mass storage I/O processors and moving or fixed-head disk drives.

With 60-day availability, a "small configuration" that can function either as a back-end processor for an IBM host computer or as a stand-alone data base machine costs approximately $232,600. This would include the IBM selector channel interface, Acos software, communications software and 32 terminal asynchronous multiplexer ports with 3M bytes of storage. DAC is at 806 Rt. 17, Ramsey, N.J. 07446.

Watson Returns To IBM Board

ARMONK, N.Y. — Thomas J. Watson Jr. is back on the IBM board of directors, this time with the title of Chairman Emeritus.

Watson, who served as IBM chief executive officer for 15 years and served on the board for 33 years, left his post in October 1979 to serve as U.S. ambassador to the USSR — a post Watson resigned earlier this month.

In other business, the board declared a regular quarterly cash dividend of 86 cents per share on common stock, payable March 10 to stockholders of record Feb. 11. The board also announced its annual stockholder's meeting will be held April 27, in Kansas City, Kans. at the Convention Center's Bartle Hall.

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Starting Salaries High, Increases Slower: Survey

(Continued from Page 1)

employers submitted to the 70 Robert Half offices over the last several months, rather than from a random sampling of computer installations.

The Half survey broke out the salary figures according to large-, medium- and small-sized installations, the determination of which was decided by the firm.

The study showed that a DP director in a large installation can expect to earn the highest starting salary of all the job categories; between $35,000 and $53,000. While this represents a 6% increase over 1980 salaries, it is only half as much as the percentage gain accumulated by the same group a year ago when salaries rose 12%.

Salaries rose more dramatically for DP directors working in medium-sized installations where they can expect a hefty 14.3% increase over year-ago starting salaries, resulting in salaries ranging from $30,000 to $42,000.

DP managers at small installations can expect to start at salaries from $23,000 to $32,000, a 7.8% increase.

Systems Analysts

A systems analyst in a large installation can look forward to a starting salary of between $24,000 and $30,000, an 8% increase. An analyst in a medium-sized installation can expect $23,500 to $29,000 for a starting salary, a 9.7% increase; and a systems analyst in a small shop can expect to start from between $20,000 to $25,000, a 5.9% increase.

Other results showed that a programmer with up to one year's experience can earn between $15,500 and $19,000 as a starting salary in a large installation, amounting to a 7.8% increase over year-ago figures. In a medium-sized site, a beginning programmer can earn $15,000 to $18,500, a 9.8% rise in starting pay, and a new programmer in a small shop can expect to start at $13,700 to $16,000 for a 10% increase over 1980 starting salaries.

Interestingly, installation size did not appear to make any difference for programmer/analysts working in large- and medium-sized installations. A programmer/analyst working in a large installation can expect to earn only 3.5% more than last year, with a starting salary ranging between $18,500 and $25,500. In a medium-sized shop, the same person can draw a starting salary of between $18,500 and $26,000, a 6% increase.

Programmer/analysts in small sites, on the other hand, can expect a whopping 15.9% increase over year-ago starting figures, raising their starting salaries to between $17,000 and $23,000.

The survey indicated that a lead programmer in a large installation can expect to start at $22,500 to $27,000, up 4.2% from 1980 figures. A lead programmer in a medium-sized shop will draw $20,000 to $25,000, a 7.1% increase in 1981. Lead programmers were found only rarely in small installations.

A systems programmer in a large site can command an annual starting salary ranging from $23,000 to $31,000, amounting to a 6.9% increase. In medium-sized installations, a systems programmer can start at $23,000 to $28,000 for a 9.7% raise in pay over new recruits last year. Again, the category was not filled in the small sites.

Starting salaries for data base administrators will range between $24,500 and $31,000 in large sites, a 3.7% increase over 1980. In a medium-sized site, the same person can expect to garner a starting salary of between $24,500 and $29,000 for a more substantial 9.2% increase over last year.

The survey did have disappointing news for computer professionals in the Southwest, Southeast and Rocky Mountain states, where starting salaries are substantially lower than the national average. States such as Florida, Mississippi, North Carolina, New Mexico and Montana ranked as much as eight to 10 percentage points below the national norm.

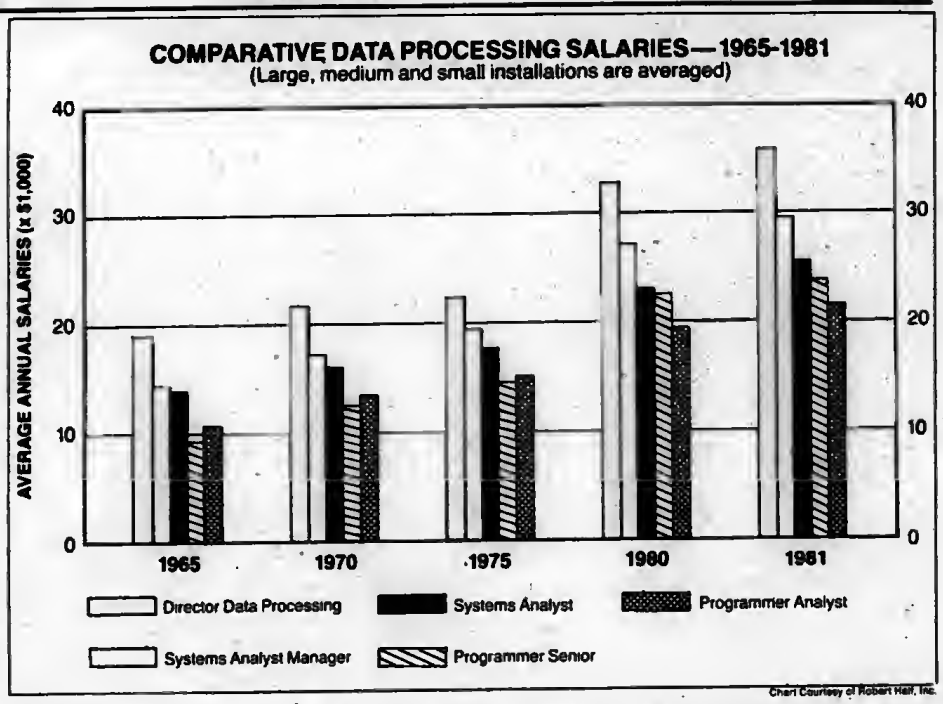


Chart Courtesy of Robert Half, Inc.

Univac Increases Certain Prices

BLUE BELL, Pa. — A "selective series of price increases" will be implemented April 1 on certain Sperry Univac systems, software support and maintenance services.

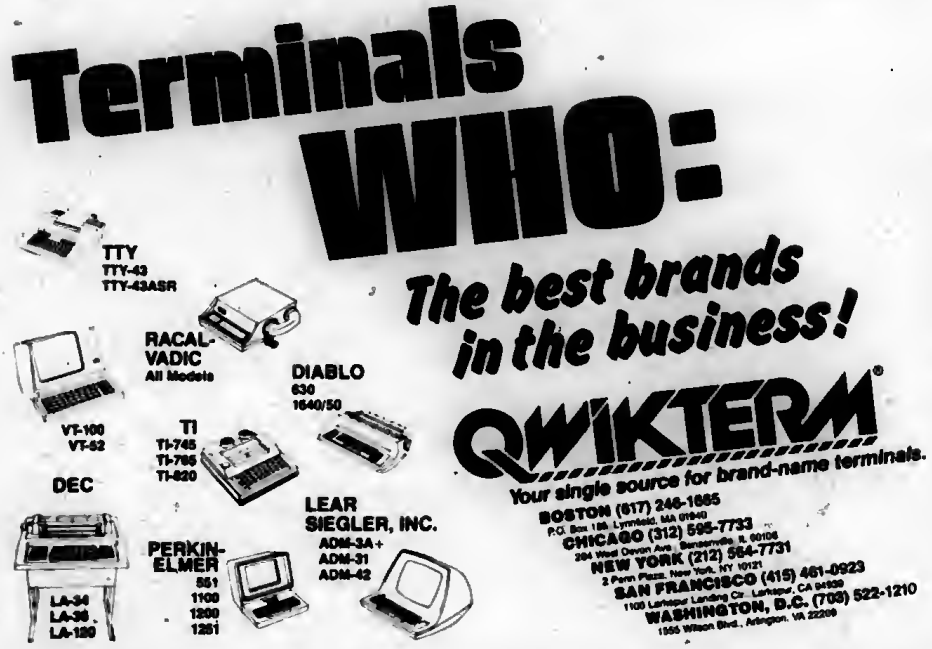
The rental, lease, and purchase prices of the Univac 1100/60 will be increased 5.5%. Lease and cental prices of the 1100/80 will also be increased 5.5%, but there will be no change in the 1100/80 purchase price, Univac said.

Maintenance service charges for all 1100/Series systems will be increased 9%. Software charges and most application packages for the 1100 product line were increased 5% to 10%.

Rental, lease, and maintenance service prices of the System 80 line will be increased 9%. Purchase price of the Model 3 in the System 80 will be increased 9%. Purchase price of the Model 3 in the System 80 line will go up 10%, and the purchase price of the Model 5 will be raised 15%.

While there will be no increases in the purchase or maintenance prices for System 80 peripherals, a spokesman said, rental and lease prices will rise 9%. System 80 software and certain application packages were increased by 15%.

Rental and lease prices for the UTS 20, UTS 40/20 and U100/200 and Text Editor (including peripherals) will be increased 5.5%; maintenance prices for those units will rise 9%. Rental and lease charges for UTS software will go up 10%.



International Net Reunites 'Boat People' Families

By Bill Laberis
CW Staff

CALGARY, Alta — An international microcomputer network is helping reunite the thousands of former "Boat People" who were separated from family members while fleeing Vietnam and Cambodia and scattered throughout the world.

Using 2,100 microcomputers in 23 countries, Family Reunification Services (FRS) has located 900 missing family members since its founding just six months ago.

And the number of Vietnamese seeking computer assistance in locating lost relatives is growing dramatically, according to FRS president and founder Joseph Caruana.

"By most estimates, about 1.5 million people have fled Indochina since 1975," Caruana said. "Separated families were often the rule. Now the computer will help bring them together again, especially as more of them come to know of our organization."

Process Initiation

Vietnamese who do know about FRS initiate the reuniting process by filling out a personal data questionnaire available through the International Red Cross or through refugee resettlement groups around the world.

Someone, say a Vietnamese man living in New York and looking for his wife, fills out the 25-question form, describing his wife by marriage and all family names, ages, place of birth, place last seen and so on. He also fills out a data profile of himself, a file of which is sent to FRS headquarters in Calgary.

A tape of his wife's profile is then sent from one microcomputer operator to another until it has reached the 2,100 operators in 23 countries. Each operator codes the data to be programmed into his own system.

If the missing wife should herself fill out a questionnaire in any one the countries where FRS operates, a microcomputer there will match her profile with the file of her made out by her husband and entered at an earlier date. The computer registers a "find."

The good news is relayed back to Calgary where FRS then begins the arduous task of physically reuniting the family, working within the statutory limitations of international immigration laws.

"A refugee, once resettled, is no longer considered a refugee, but a citizen of the host country," Caruana said. "Emigration and immigration rules, quotas and political factors then come into play. But the computer's work is done."

Caruana said that most countries "bend over backwards" to help reunite families, cooperating with the United Nations High Commission for Refugees in the resettlement.

Despite its early successes, the project has not been without its problems, many of which develop in the questionnaire phase of the process.

For one thing, a 20-year old American would be listed as 21-years of age by the Vietnamese, who consider a newborn to be one-year old.

And some Vietnamese women retain their birth names, while others write their first name last and the last first, sometimes including their mother's maiden name and sometimes not.

And once FRS came within hours of sending an anxious wife in France winging to the waiting arms of a husband in New York — but not her husband.

'Rewarding Moments'

"We've had our share of rewarding moments, too," Caruana said. "Recently we had a pretty definite match between a woman in Saskatchewan and her four-year old son in Wellington, New Zealand, but we weren't absolutely sure."

FRS sent a photo of the woman to Wellington. The child took one look at it, then burst into tears, crying for his mother.

The two were reunited, and the woman, who speaks no English, has phoned Caruana several times since then, saying "cam onh" over and over again — Vietnamese for "thank you."

What's Needed to Join FRS

CALGARY, Alta. — The minimum system requirement to become part of the Family Reunification Services (FRS) network is a microcomputer with at least 16K bytes of main memory and at least one cassette. A disk drive will greatly facilitate running the matching program, FRS President Joseph Caruana said.

Interested parties should specify equipment to be used when writing FRS for information. FRS will then send out a dummy program of 10 lost and found profiles. If the test program can be run successfully, matching the losts with the founds, the operator is accepted into the network and will begin receiving real refugee profiles.

Caruana said the network could possibly be used in the future to help locate people separated from their families by national or global disasters.

The total financial commitment of any volunteer operator for postage and tape expenses should not exceed $100, he said. Interested parties should write Joseph Caruana, Family Reunification Services, 7203 Huntercrest Road N.W., Calgary, Alta., Canada T2K 4J9.

I'll bet you $20 I can teach you OS JCL

Wayne Clary

Wayne Clary
Mike Murach & Associates, Inc.

I know how frustrating OS JCL can be. You write a program that requires some feature of JCL you havea't used before. So you have to dig through the IBM manuals, tryiag to figure out which of the details apply to your situatioo. Or you have to consult the resident JCL "guru" in your shop, who tells you oae secret at a time. Once you finally figure out a way to handle the JCL, you do it the same way forever...ao matter if it's the best way. If it works, you use it.

I know how bad most of the JCL training courses are. Lots of theory, but no practical application. Lots of facts, but no examples. Io fact, most of them are as bad as or worse than the IBM manuals they claim to be explaining. So why try to learn any more than you have to?

I kaow what it is to avoid using some of the "features" of OS because of the JCL involved. For example, I never liked to use the OS utility programs. I always wrote a COBOL program for the fuaction and ran it instead. It was easier than finding out what JCL I needed to run the utility.

So I know what I want my new book, *OS JCL*, to accomplish. I want it to teach you how to code the JCL for the applicatioas you have to run on a day-to-day basis. I want it to teach you to use timesaving techniques that can reduce coding errors. I want it to teach you how to write JCL so the code is easier to read and change.

And I bet you $20 that it will. The $20 it costs to buy the book. Because if you can't learn OS JCL from it, you shouldn't have to pay for it.

OS JCL will save you time and effort

I hate to use a phrase like that because you hear it said about every product ia every ad that crosses your desk. But it's the guideline I used in developing *OS JCL*, and I'm coovinced it's true (or you keep your $20).

The content I know you're oot interested ia every facet of OS JCL. If you were, you'd just read the IBM manuals and experiment. So I didn't cover everything in this book. Iastead, I concentrated oa the applicatioas I know you run into most often.

As a result, you'll learn to execute utility, sort/merge, language translator, and link-edit programs. You'll learn to create, maintain, and execute JCL procedures. You'll learn to code JCL for handling sequential, direct, ISAM, and VSAM files. You'll learn what JCL to use on virtual storage systems. You'll learn to use the OS libraries. And ta each case, you'll gaio a thorough understandiag of what to code and why you're coding it.

Plenty of examples If there's one failing in almost every course I've come across, it's that there aren't enough examples. Or that all the examples show the same thing. Or that the examples are so limited, you're not sure how to fit them into an actual job stream.

In *OS JCL*, though, you'll find literally hundreds of JCL listings that you can use as models for coding your own jobs. I've tried to keep them all as realistic as possible, so you'll feel comfortable even when you have to deal with extensive job streams.

How the book is organized It's annoying to read ten chapters of a training text and still aot know how to do anything. So in *OS JCL*, the first three chapters present a complete JCL subset that gets you started coding many functions right away. The remaining six chapters cover specific topics—advanced file handling, libraries, utilities, etc. So after you've finished the subset part, you can go on to any topic you want to know about.

Installation specifications I'm afraid I can't promise that *OS JCL* will free you from your JCL guru right away. There are too many JCL parameters that are installation-dependent. That means you'll have to check with someone at your installation to find out if you should use them and what values to code ia them. What this book *does* do is point out the installation-dependent code. So you'll know what each parameter does and where its values come from...instead of coding parameters that are unaccessary or inefficient oa your system because that's the way it was in the book.

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Note to JCL gurus: An OS JCL specialist recently wrote to say he's delighted with *OS JCL* and thinks it will make his job easier. Why? Because the programmers in his shop will be able to solve many JCL problems on their own using the book. And that will give him time to concentrate on the really challenging problems.

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OJ-2

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Age of Autonomous Manager Seen Passing as DDP Emerges

By Rita Shoor
CW Staff

BOSTON — Executives may differ in their perception of what distributed processing is, but they agree on one thing — the day of the autonomous data processing manager is definitely passing.

The upper level managers from Fortune 500 companies across the U.S. came to this conclusion during the fourth distinguished lecture program sponsored by Lexington-based Nolan, Norton & Co. (NNC) gathering at the venerable Harvard Club here. The group heard presentations on various facets of distributed data processing (DDP) that emphasized its organizational impact rather than any technical aspects.

"Although you may think that you're totally centralized," close examination may reveal that functions such as data entry, budget responsibility and/or a "lot of system analysis" are actually being conducted in user departments, according to Jack Buchanan, director of technological innovations for the Federal Judicial Center.

Buchanan's point was illustrated by Tom Johnson, director of research for NNC. He recounted the tale of a potential client calling in the consulting firm to "help them get into DDP." The client felt that its processing was totally centralized and pointed to a room containing some 12 mainframes as its processing center.

NNC found that the client also happened to have approximately 400 different computers installed in field offices. Firm technicians explained that they did not think they had distributed processing because these machines were not a part of their network.

Even with this confusion about definition, today's DP manager is being pressured into decentralization and DDP by users who feel that the central staff has not been responsive enough to their needs, James C. Emery from the Wharton School of Business noted.

Piece of the Action

He maintained that the users see the growing importance of computers in their operations and "they want a piece of the action." But these same users are "sometimes naive in their expectations of what technology can deliver," he said, stressing that many do not realize that hardware is only a small fraction of the cost tied to bringing up a successful system.

That same naivete often results in the central data processing staff being called in to bail out the user departments when they get into trouble, judging from workshops conducted after the formal presentations.

Not one of the workshop participants espoused the idea that central DP must "control everything." There was not a dissenting voice from anyone in the room when Joe Guglietta, assistant vice-president for casualty systems at Aetna Life and Casualty, pointed out that "you don't have control until things go wrong . . . then you have responsibility."

The executives agreed that, at least initially, the central DP organization should have a high degree of control on various aspects of distributed computing.

"I don't want the user buying equipment," George Trumbull, vice-president at Connecticut General Life Insurance, said. He maintained that the central organization could often "get a better deal" on hardware than a regional office. Centralized purchasing also avoided the compatibility problems apt to crop up when field organizations are purchasing their own equipment, he noted.

Guglietta felt that small stand-alone systems could certainly be justified for outlying operations with specialized processing requirements.

However, he cautioned that it is unrealistic to expect the DP staff to control application development on such a system. While "it's enormously inappropriate for a user to write new application code on the machine . . . you can't stop them" from doing so, he admitted.

Workshop consensus was that setting the standards for distributed systems belonged to the DP staff. The role of securing private data was also relegated to the DP department by workshop leader Dave Blackwell, senior vice-president of the information services division at Massachusetts Mutual Life.

In addition, the DP area must provide a general strategy for the outlying systems and guidelines that are in line with corporate goals, Blackwell noted.

Honeywell Price Jumps Blamed on Inflation

WALTHAM, Mass. — Citing the continued effects of inflation, Honeywell Information Systems has increased its price and license fee from 5% to 20% for most of its medium- and large-scale computer products and services.

The new prices will become effective immediately for new business and on April 1 for existing contracts or according to the terms of individual contracts.

Increased between 7% and 10% were rental/lease charges for DPS 8 and Levels 64, 66 and 68 DPS and non-DPS systems, Datanet 8 and other Levels 66 and 68 network processors, selected DPS and non-DPS peripherals, all Xerox Corp. products, communications and terminal equipment and selected banking equipment.

Purchase prices were raised between 5% and 15% on selected DPS 8 peripherals as well as certain Levels 62 and 64 peripherals and factory data collection terminals and controllers. License fees for selected system and application software products were raised up to 20%.

Also increased between 5% and 15% were selected monthly maintenance charges for the DPS 8 and Levels 62, 64, 66 and 68 DPS and non-DPS central systems and certain peripherals, communications and terminal equipment and selected banking equipment.

Hourly and monthly system engineering charges for all product lines, field engineering on-call hourly rates and time and material rates were raised 10%, while those for selected education and training services were increased up to 15%. Honeywell is headquartered at 200 Smith St., Waltham, Mass. 02154.

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Politics Kills Bidding on Baltimore System

By Marcia Blumenthal
CW Staff

BALTIMORE — An attempt to get the city government here to entertain competitive bids for computer equipment — in this case an IBM-compatible system — pitted municipal agencies against one another in some good old-fashioned, rough-and-tumble politics.

In the end, competitive bidding did not prevail.

The squabble erupted last November when Magnuson Computer Systems, Inc. approached the city auditor with an alternative proposal for upgrading the IBM 370/125 system used at the city's Ashburton Data Center.

That outmoded processor was running the city's automated-meter water billing system. In recent months that system had been improved 1,000% and now brings in $50 million in revenue to the city, noted Al Muehlberger, chief of the city's Bureau of Management Information Services.

Last spring Muehlberger's department did a capacity planning survey and realized the system would have to be upgraded to handle an increased work load. At that time he recommended acquiring an IBM 3031 snd approached City Auditor Daniel Paul for financial approval of the system.

As late as November Muehlberger claimed Paul told him there would be no problem clearing the proposal through the Board of Estimates, the municipal unit responsible for approving financial requests.

Magnuson Proposal

However, during that month Magnuson brought an alternative proposal to the city auditor for a system it claimed had the same capacity as the 3031 but was $550,000 less expensive.

However, the usual procedure in Baltimore is that the vendor first approach the user agency, which in turn approaches the city auditor, who then presents proposals to the Board of Estimates.

The city was scheduled to pay $731,000 for the new 3031 and a payoff of $102,967 for the 370/125, which now sells for $2,000 on the open market, claimed Nick Jackson, Magnuson's Baltimore branch manager. Jackson, who formerly worked for Memorex Corp., knew Paul from previous dealings with the city.

Jackson proposed an M80-32 to be later upgraded to an M80-43, which he claimed is comparable to an IBM 4341. The Magnuson package was priced at $318,200, he said.

Knowing it was unlikely that competitive bidding would prevail for the contract, Jackson said he also pointed out two other proposals to the city auditor. One was acquiring the 3031 from a third-party company for $250,000 less than IBM's price. Also, claiming the 3031 was obsolete, Jackson suggested leasing the 3031 and ordering an IBM 4341 because this would be more cost-efficient.

Attractive Savings

Attracted by the savings offered by Magnuson, the city auditor proposed the equipment be put out on competitive bids. Paul said he has been trying to institute competitive bidding for computer equipment for the past couple of years. The city does have some non-IBM peripheral equipment, but is largely an IBM shop.

At that time Paul requested Muehlberger take a look at the Magnuson systems installed in the city of Newark, N.J.

After visiting Newark, Muehlberger concluded the systems were not comparable. They were less powerful and were used in a much smaller environment, he explained.

Moreover, Muehlberger also maintained the initial Magnuson system proposed (the M80-32) was not large enough and that the upgrade would not have been available until spring. He also said the savings were not $500,000 because the systems proposed by Magnuson were not comparable to the IBM 3031.

"We still would have had to do something with the operating system," he stressed. Muehlberger emphasized he has a limited budget and a limited amount of DP talent. "We don't have a lot of money to play with and because of that we are never on the leading edge of technology."

His department's budget is about $5.5 million and his staff totals about 150. In addition, Muehlberger has input into the citywide DP budget of $10 million.

"When looking at comparable vendors you must also see if they are equally credible. Magnuson is just starting to penetrate the Baltimore area," he said.

The time element was crucial in this case, Muehlberger continued, noting the water billing system is a big revenue producer for the city.

As the controversy reached a heated pitch late last year at a Board of Estimates meeting, the city's Finance Director Harold R. Tall put an end to the matter by invoking the city's statutory perogative of deciding to buy equipment without going through normal competitive bidding procedures.

As one observer put it, Mayor William Donald Schaefer is goal-oriented and has little patience for lengthy evaluations. He is very much involved with rebuilding the city and IBM has certainly played an important part in the city's Inner Harbor redevelopment, the observer noted. Right now the new 3031 is in the process of being installed at the Ashburton Data Center.

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Parker Sees Computers Replacing Nuclear Arms

By Tim Scannell
CW Staff

MONTE CARLO, Monaco — Ten years from now, computers and terminals will replace nuclear arms as international weapons of destruction. In fact, Armageddon may involve the total destruction of the world's data banks rather than the physical annihilation of property and human life, according to Donn B. Parker, an international computer security consultant.

"Nuclear warfare will be obsolete," Parker said. It is much more attractive that wars in the future be computer wars. After all, "Why would one country want to blow up another country and have nothing left?"

Speaking here last week at the first International Symposium on Computer Security and Privacy, sponsored by CCI Honeywell Bull, Parker drew sharply away from his usual lecture-circuit topic of petty computer crime and focused on the extreme international implications of deliberate computer misuse.

Thus far, the typical computer crime involved a white-collar criminal who dabbled in "data diddling" and somehow managed to divert a bank's funds or pad his payroll check by a few dollars each week, Parker explained. However, things will be dangerously different in the coming years. More and more career criminals, extreme political advocates and foreign governments are learning just how dependent most major nations are on their computers and how defenseless these countries would be if their machines were suddenly crippled. There are even a few "technologists" in the world who know exactly how to go about bringing a nation to its computerized knees, Parker stated.

Nations are so dependent on the continuous operation of their computers "that it will eventually become an issue of national security," he continued, suggesting that government control of all computer systems — public and private — may be an ultimate solution.

Computer Wars

As the more than 440 people in Monaco's Centre de Congres listened carefully — most of them through French and German interpreters — Parker painted a few computer war scenarios. International crime methods ranged from threatened system destruction, which Parker called "the Harvey's Casino technique" after the explosive incident last year at Lake Tahoe, Nev., to the partial incapacitation of a nation's computers.

One actual, though accidental, situation occurred recently in the U.S. and involved a computer-based modification of the country's economic index. Although he would not state exactly when it happened, a government worker apparently made a $37 billion error in the nation's MLA file, which indicates the total cash available in banks and financial institutions across the country. At the time, the error amount represented 10% of all the money at hand, Parker explained.

Because the government worker went on vacation shortly after the error was entered into the federal file, the mistake stayed in the system for about three weeks. During that time, the erroneous MLA file resulted in a $65 billion paper loss in the American stocks and bonds market. Parker also admitted talking with a stockbroker who claimed he and his client will lose several million dollars because of the error.

What would happen, Parker asked, if an unethical business or foreign power deliberately scrambled the MLA file and the U.S. government's four other indicator files, which cover such things as nationwide air traffic control? Probably total chaos, he answered.

Other computer war tactics might involve deliberately manipulating worldwide computer-based weather forecasting systems, which could sabotage the commodities markets; altering the computer files that control the distribution of energy; or putting a crimp in the international Electronic Funds Transfer (EFT) system, which shuttles about $600 billion around per day, Parker said.

Easy Crime

One fairly easy crime for a foreign "technologist" to commit would be to throw a computerized wrench into worldwide news information systems. By changing a few key facts in a news story just prior to its transmission, a saboteur could temporarily knock a nation off balance by disrupting the population, Parker said.

Standing 6'6" tall and leaning toward his audience, the Standford Research Institute international consultant boasted that he had on more than one occasion walked into a newsroom, sat down at a terminal and called up that day's news stories. Changing these stories would have been simply a matter of pressing the right buttons, he noted.

What can one do to prevent international extortion or computer misuse on a national security level? For the moment nothing, Parker observed. You could stop or slow down the technology juggernaut or turn over all of your computer room keys to the government and its military security measures, but those two measures are highly unlikely. You could also motivate people to believe that "it's not nice to touch a computer system," as the Swiss have learned it is socially unacceptable to rob a bank because of that nation's dependency on money systems, but that idea is also a little far-fetched.

What would work, however, is an acceleration of security research and development programs, enlightened self-interest in thwarting computer crime and very moderate government action, which would involve borrowing a few military protection techniques, Parker said.

Terrorist Attacks Escalating

MONTE CARLO, Monaco — Last year in France, two computer systems — both containing extensive records, archives and software programs — were deliberately burned beyond repair. Two different terrorist groups claimed responsibility for the attacks.

Two years before that, a public transport system in Rome was destroyed, probably by terrorists, and again in France terrorists allegedly cut the telecommunications lines of the heavily protected Air France Computer System, knocking it out for five hours.

Violent attacks by extreme leftist groups and terrorist organizations are on the increase.

Only this time, computers and communications systems are the targets, instead of high-ranking government officials, Stein Schjolberg, chief of the police prosecutors section in Oslo, Norway, said. "A new dimension has been added to law-breaking," he stated, one that thrives on the impersonal, "out-of-sight, out-of-mind" nature of computers.

Schjolberg, who is also associated with the Norwegian Research Center for Computers and Law, explained that because no computer system is invulnerable and police are untrained in fighting this type of crime, more and more terrorists are focusing attacks on major computer centers.

In the case of the two computer systems destroyed last year in France, two groups claimed responsibility, but for very different reasons. One group credited itself with destroying the Philips Data Systems and CII Honeywell Bull computer as the start of "a systematic campaign to attack computer companies and computer centers in France." The other group claimed in a newspaper to represent "computer workers" who knew the present and future dangers of computer systems, Schjolberg noted.

Data Means Money

Because of "the technological revolution," information on persons or collected by firms is "as valuable as money," he said. Therefore, the machines that hold this wealth have become fair game for terrorist activities.

Presently, few police departments in the world understand the workings of a computer, let alone how to defuse a potential computer crime. In fact, discovering one after the fact has proved to be a hard enough chore.

The Federal Bureau of Investigation (FBI) has what is believed to be one of the best training courses in computer crime, the Oslo police chief explained. No such programs are available in Europe, except for minor training offered by Denmark and Switzerland. Interpol, a representative of which was present in the audience, plans to offer an FBI-type course in Paris later this year, Schjolberg pointed out.

Anticomputer establishment groups are already far ahead of the European training game.

In England, a group that calls itself "Crank" not only claims that it can access a variety of computers in Great Britain via Datel and networks, but it can also penetrate a number of U.S. computer systems.

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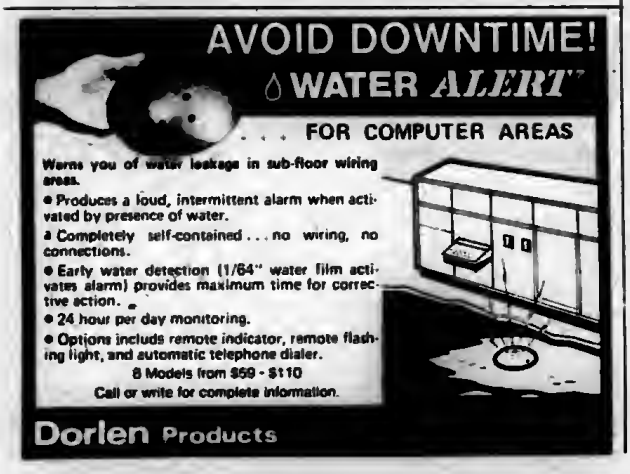

Wants $328 Million

Ex-Employee Sues IBM for 'Wrongful' Firing

By Jeffry Beeler
CW West Coast Bureau

SAN JOSE, Calif. — A former employee of IBM's General Products Division (GPD) hes filed e $328 million breech-of-contract suit charging the industry giant with "wrongfully" firing him for allegedly planning to form a rival disk-systems company.

The suit accuses IBM of violating e lifetime employment agreement with disk-systems designer Reymond Poe, who had worked at the firm for almost 30 yeers before being "summarily" cenned last May 13.

Filed on Dec. 31 in Senta Clere County Superior Court here, the compleint elso accuses IBM of bypessing its usuel grievence procedures in dismissing Poe and of allegedly denying the pleintiff his compeny-gueranteed severence pey and other fringe benefits.

'Melicious' Efforts

Poe described his recent firing as e "willful and malicious" effort by IBM to "injure and oppress" him and seeks exemplary end punitive damages totaling $300 million. Pert of the requested relief, which is equivalent to about 10% of the compeny's 1980 profits, would be set aside as e charitable fund to eid previous victims of ellegedly wrongful IBM dismissals.

The suit elso seeks en edditional $25 million in punitive damages and another $2.5 million to compensete the plaintiff for any emotional stress end professionel embarrassment erising from his recent firing.

Asked to respond to Poe's cherges, IBM voiced confidence that the breach-of-contract suit would be found to be "without merit" and noted thet the firm has yet to receive e formal summons in the case.

Poe's association with IBM cen be traced back to March 1951 when he negotiated e part-written, pert-orel employment contract allegedly ensuring him a lifetime career with the company. During the intervening 29 yeers, Poe fulfilled all the terms of his agreement and played e central role in designing various IBM disk systems, including the models 2314, 3350 end 3370, the complaint said.

Poe epperently never encountered eny serious work problems at IBM until last yeer when he reportedly placed e clessified newspaper ed publicizing the services of nine unidentified disk-systems engineers, et least one of whom wes described es having extensive experience in designing IBM products.

The ad eventually ceme to the ettention of GPD President William Eggleston, who summoned Poe to his office without warning end esked the engineer if he wes in eny way responsible for the blurb.

When Poe declined to comment end asked to be represented by an ettorney, Eggleston accused him of plotting to compete with IBM end fired him on the spot, the suit claims. To this day, Eggleston still ellegedly refuses to disclose the source of his informetion that Poe was planning to go into business for himself as en IBM competitor.

In sacking the 60-yeer-old Poe, IBM is reputed to have deprived him of more then $500,000 worth of future salary, stock options, pensions end other fringe benefits. IBM also deprived the pleintiff of all severence pay, which under long-stending company policy totals two weeks salary for every yeer of employment, the suit seys. Poe estimates his back severence pay et more than $50,000.

In response to his former employer's actions, the pleintiff filed e compleint cherging that his firing violates the 1951 permanent-employment contrect end thet he wes denied the usual IBM prerogetive of answering his accusers in a grievence proceeding.

Poe's suit also complains that various unknown defendants, either inside or outside IBM, "resented and objected to" the pleintiff's disk-systems expertise end "maliciously" supplied the firm with informetion thet led to his eventual dismissal. The unknown defendants, whose identity the suit seeks uncover in court, fece punitive dameges totaling $25 million.

Lawsuits Against Iran Await Document on Procedures

WASHINGTON, D.C. — Although the executive order explaining the egreement mede with Iren to secure the releese of the 52 hostages hes been circulated to parties involved in lewsuits with the Irenien government, the implementation procedures document for that order is still pending.

An official et the U.S. State Depertment seid he did not know when the document outlining the procedures for petition to the International Arbitretion Commission would be releesed.

Under the agreement which freed the hostages, all privete litigetion ageinst the Iranian government was terminated, eccording to Lawrence Perlman, vice-president and general counsel et Control Deta Corp. The agreement also provided for the transfer of en estimeted $8 billion of Irenien essets to en escrow account set up with the Benk of Englend. Thet money will be epplied egeinst Iren's bank loens end other financiel claims against the country.

Companies with lawsuits egainst the government of Iren will now have to bring their claims before the International Arbitretion Commission for heering.

Perlman seid his legel staff is now reviewing the executive order. CDC filed e $28 million suit ageinst Iran in November. Likewise Computer Sciences Corp., which has en $8.9 million suit pending against Iren, was ewaiting word on how to proceed.

Other compenies with suits egainst Iran include Herris Corp. and Advenced Computer Techniques: Electronic Deta Systems Corp. received e $19 million judgment egainst Iran last Mey but hes not yet been paid.

GSA Lets CSC Resume Bidding for Contracts

WASHINGTON, D.C. — The General Services Administration (GSA) has relaxed restrictions against Computer Sciences Corp. (CSC), ellowing the firm to resume bidding for all new federel computer services business except time-shering services.

GSA instituted its initial ben egainst the company, which supplies GSA with its Infonet time-shering service, beceuse of criminal indictments brought egeinst the firm, including fraud, bribery end conspiracy. GSA implemented its suspension lest November, but e U.S. district court recently dismissed the majority of the charges egeinst CSC [CW, Jen. 19].

The remeining counts of indictment ere scheduled to be heerd in a trial set for Merch 9.

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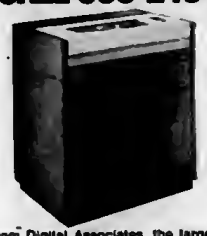

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Driver Data Bank Proposed Amid Privacy Fears

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Despite arguments it would constitute a national data bank seriously jeopardizing citizens' rights of privacy and due process of law, an upgraded national computer/communications network to help keep problem drivers from obtaining licenses will be proposed in Congress this week.

Legislation to significantly expand the systems capabilities of the National Driver Register (NDR), under the direction of the Department of Transportation's (DOT) National Highway Traffic Safety Administration (NHTSA) is being prepared for introduction by Rep. James Oberstar, according to an aide to the Minnesota Democrat.

The bill is being drafted by congressional legal counsel along lines proposed by a recent NHTSA study for improving the NDR, according to Oberstar's legislative assistant, Greg Martin. Draft legislation by NHTSA was stopped by opposition to the NDR upgrade from within the Carter administration.

According to an official of the Office of Management and Budget (OMB), which coordinates federal agency proposals for legislation, DOT efforts to put forward a bill for the NDR upgrade were halted after several agencies presented strong privacy arguments against the plan.

Addressing that point, a DOT official said "certainly there is potential in any system for invasion of privacy." However, he continued, the greater good of possibly saving hundreds of thousands of lives through the NDR outweighs fears that a few might have their privacy jeopardized.

The official, who requested anonymity, also noted driving records in most states are public to begin with and expressed the opinion that unauthorized access to the system could be adequately, if not completely, controlled.

In any case, he said, NHTSA intends to test the system with a four-state pilot program. If that test shows the system to be impractical from a technical standpoint or unmanageable from a security standpoint, the entire program would be called off.

The current NDR, in place for almost 20 years, relies too heavily on the mails for information transfer between states, according to NHTSA. By the time a state learns license applicants have had their privileges revoked or suspended in another state, they have already received new licenses, NDR proponents say. There are as many as 14 million illegal drivers on the road today, by one estimate.

The proposed upgrade would allow state licensing authorities to find any applicant records on file in other states in only minutes through a nationwide on-line system overseen by NHTSA [CW, Jan. 12].

Numerous Criticisms

However, there have been numerous criticisms of the NDR upgrade from privacy advocates and from within several federal agencies, including OMB and the National Telecommunications and Information Administration, which object to this latest upgrade proposal. Among them:

- There is no evidence, opponents say, that the system, despite its 20 years of operation, has resulted in decreased highway accidents or injuries. Also, they argue, NHTSA has not shown the proposed upgrade can provide a more effective system.
- The proposal would create a national data bank of sensitive personal information. Connection of the state driver data banks in a system overseen by a federal agency — NHTSA — could create serious problems of security and privacy protection and raises the issue of federal control over state law enforcement activities.
- The upgrade proposal, it is argued, would allow for expanded use of the data, beyond the present statutory restrictions that allow it to be used for licensing purposes only. There are fears, for example, the data could be used for employment purposes.
- Federal law prohibits an agency from offering services, in this case switched data communications, that are readily available to states from commercial sources.
- The proposed system would include records of many more drivers than intended in the original 1960 authorizing legislation and subsequent amending legislation. The new system could include records on all persons whose licenses have been denied, cancelled, revoked or suspended for any reason, not just for unsafe or illegal driving practices.

This in turn would necessitate a major expansion of the NDR at a considerable cost. Opponents note that without a provision for state support of the system, almost the entire financial burden, estimated at about $71 million over the first 10 years, would fall on the federal treasury.

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Book Dealer Asks $3.35 Million

Qantel Sued for Allegedly Inadequate Mini

By Bill Laberis
CW Staff

NEW YORK — A Long Island distributor of scholarly books has hit Qantel Corp. with a $3.35 million lawsuit charging that a minicomputer it bought failed to work as promised.

Ballen Booksellers International, Inc.'s suit asks punitive damages of $2.25 million, out-of-pocket costs and actual damages totalling $750,000 and counsel fees of $350,000.

Scheduled to react here in court Friday to the recently filed suit by filing a coontersuit, Qantel charges the book dealer failed to pay a balance of $24,900 it allegedly owes for a disk drive bought from Qantel.

Patricia Durham, administrative attorney for Qantel, said her company denies Ballen's charges. Qantel's equipment, which Ballen is using at present, "does in fact work. Ballen just does not want to pay its bills," Durham maintained.

Ballen's suit charges that neither the Qantel 1400-2 nor the 1450/2 CPU installed at Ballen's Commack, N.Y., office ever operated as warranted by Qantel of Haywood, Calif. In particular, simultaneous use of the computers by more than one CRT terminal user resulted in considerable degradation, or time loss required for any single terminal user to input or retrieve storage information, Ballen has alleged.

This degradation, it said, forced Ballen, a wholly owned subsidiary of Mohawk Data Sciences, Inc., to run much of its programming at night, using operators and management personnel on an unanticipated overtime basis.

Turnkey Is Key

In addition, the suit charges Qantel never furnished a complete software package for either CPU, claiming Qantel had agreed to furnish a complete software and hardware (turnkey) system. According to the suit as filed, Ballen's $90,000 purchase price for the 1450/2 system included the CPU and peripheral equipment, but not a software package.

"Even though we paid a separate ($25,000) fee to Tryad Systems, Inc. [of Tenafly, N.J.] for the software, Qantel had agreed to undertake a turnkey operation," Alvin Wayne, Ballen's attorney said. "Qantel investigated Tryad and several other software firms initially. In a written proposal to us, Qantel undertook to use Tryad to deliver our software. Qantel agreed to have us contract with Tryad for software in lieu of using their own people."

Leonard B. Schrift, Ballen's president, said, contrary to Qantel's claims, the problems with the system extend beyond the software.

"We were willing to spend more money to improve the system, including buying more memory enhancements," Schrift said.

"We had specified a certain present and anticipated future work load when we first dealt with Qantel in 1978. The machine they sold us simply is incapable of doing it. We found them to be 99% inaccurate, insensitive and unsupportive."

Hardware Only

Qantel's Durham said her company "did not contract to sell or furnish any software" to Ballen, but to sell hardware only. Durham characterized the dispute as a payment problem in which Ballen has refused to pay nearly $25,000 for a 75M-byte disk drive it bought to augment the capacity of a similar disk drive that came with the original hardware.

'We had specified a certain present and anticipated future work load when we first dealt with Qantel in 1978. The machine they sold us is aimply incapable of doing it, We found them to be 99% inaccurate, insensitive and unsupportive,' Ballen's president said.

"The size of the suit and claim clearly do not have any bearing as to the size of the complaint," Durham said.

Wayne, meanwhile, indicated an out-of-court settlement is possible, saying Ballen should not bear "payment responsibility for a disk drive it should never have had to buy," and that the book dealer is "looking for additional CRT terminals."

Durham, however, said Qantel will offer software consultation to Ballen, "but will offer no money or additional equipment without charge."

A status hearing on the case is scheduled before Judge J. Marc Costantino March 22.

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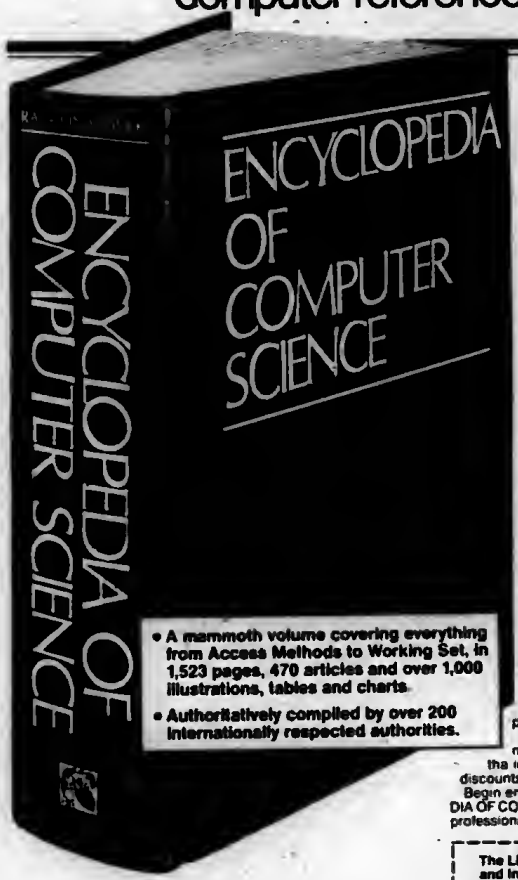

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Talent Search Finds Pigeons, Politics, Pollution

By Bruce Hoard
CW Staff

This is tha strenge and compelling saga of a boy and his pigeon. It is also a tale of politics and pollution.

Throw in youthful ambition and you'va got tha Westinghouse Science Scholarships and Awards 1981 Honors Group.

Westinghouse's 40th annual Scienca Talent Search leading to the selection of 300 high school studants from 35 states is an eclectic effair, indeed. For instenca, 18-year-old Stephen Wong Lim of Alhambra, Calif., asked tha musicel question, "Do IS Elemants Hava Preferred Sites in Lambda Bactariophaga?"

Williem Blaka Brown, 18, of Jecksonville, Floride, worked on a project *Computerworld* raaders will find a little mora easy to identify with. He entitled it "Computer Controlled Malfunction Pigeon Behaviorel Analysis Laboratory: Hardwara and Software."

Admittedly sort of en offbeat name, but Brown is no weird bird. Ha built his own microcomputer from scratch (not from e kit) and also wrote its pigeon-monitoring softwara. The idae cama from his work in e psychology lab.

During tests in that leb, pigeons were meesured for their response to verious light stimuli. A light was flashed behind a key hanging in the cege. Sometimes it stimulated the pigeon to peck et tha key, other times not.

Evantually, tha axperiment graw unwieldy as increesed sophisticetion demanded mora lights and keys then the caga could accommodete. "There were e lot of mechenical things that could go wrong," said Brown, who hopes to ettend MIT.

In response to the crisis, tha high school student took e Rudolph-the-Red-Nosed-Raindeer epproach. "I cama up with tha idee of using a TV set and color graphics," ha commented. "Than I mounted a photocell on the pigeon's beek to tell when end whare he pecks on the screen."

With call on beak, the pigeon was freed of his technological restraints and the tests went forward apace, Brown said.

Computer Chess

Seventeen-yaar-old Harvey Okin picked a decidedly less exotic project to develop. In fact, computer chess-playing programs ara among tha oldest computar epplicetions.

Okin, a games eficionado, anjoys charting biorhythms and drawing computer-generated calenders. He would lika to ettend MIT or Worcester Polytechnic Institute.

His Fortran IV chass program consists of 500 to 600 statements and looks three to four moves in advence. It took only a week to write, but ha has been refining it for ebout a yaar.

The problem with the program is not its softwara, but the somewhat ancient IBM 1130 it runs on, according to e scornful Okin. Tha 1130, which had its heyday somewhare back in the mid- to late '50s, drasticelly limits his ability to make tha progrem see additionel moves in advence.

"With this computer, it takes eight hours to get it to look ona mora mova in advanca," ha said. "To look two more moves would take ebout e yeer. So in other words, I need e fastar computar."

Last year wes a political year and tha election of Ronald Raagan threw many Amaricans into a state of confusion, feer and despair. How did it happen? Why did so many Democrets cross the usuelly sancrosanct party line to elect a former actor?

These were the quastions to which Waltar Schmidt, 16, of Flushing, N.Y., epplied himself. Schmidt worked from the pramise thet issua partisanship end cendidate partisanship eclipse party registretion.

In ordar to find out why, ha took two surveys emong 44 members of the PTA at his school, Francis Lewis High School. Respondents were asked to express their political affiliation and several questions on such topical subjects as the ERA and abortion.

Schmidt analyzed the results with a psychological method known as chi-squere distribution. Ha then surveyed the parents of gifted students, everaga students and below-avarage studants. They were asked to tell who they were voting for and why.

Tha results were again chi-squared and tha truth revealed. "Perty partisanship is a lot less influential then issue and candidata partisenship," he concluded.

Although students Brown, Okin and Schmidt did not make the elite group of 40 finalists who qualified for e share of $89,500 in scholarships and cash prizes, severel studants with computer-related projects did.

They ere:

- Danial Shenon Briggs, Mill Valley, Celif.
- Wendy Eileen Soll, Evanston, Ill.
- John Merion Gappert, Omahe, Neb.
- Seth Steven Finkelstein, Bronx, N.Y.
- Tao Dinh Ngo, Bronx, N.Y.
- Charlas Curtiss Mancusso, Buffalo, N.Y.
- Martin Bruca Millar, Flushing, N.Y.
- William I-Wei Chang, Fresh Meadows, N.Y.
- Terence David Sanger, New York, N.Y.
- Edward Georga, El Paso, Texas.
- John Scot Penberthy, Houston, Texes.
- Bryan Douglas Henderson, Olympia, Wash.

Nixdorf Opts for Ethernet

BURLINGTON, Mass. — Nixdorf Computer Corp. here has said its local-natwork products will be based on Ethernat, the local-net architectura jointly developed by Digital Equipment Corp., Intel Corp. and Xerox Corp.

So has perant company Nixdorf AG of West Germany, indicating that North American and European users will heva Ethernet from sources outsida DEC, Intel and Xerox, regardless of signs that tha Institute of Electrical end Electronics Engineers (IEEE) will not produce a local-net standerd Ethernet cen fully meet.

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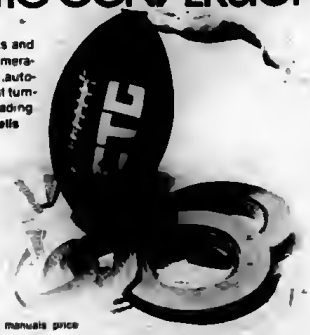

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Barn Door Locked Too Late

Alleged Embezzler Nabbed a Week Before Audit

By Jake Kirchner
CW Washington Bureau

BALTIMORE — Just one week before the scheduled start of a computer security audit, a computer operator at a hospital data center here was arrested for allegedly embezzling almost $40,000.

The employee, 31-year-old Barry E. Wyche, was charged by state law enforcement officials with altering a computer tape containing information on service providers to the University of Maryland Hospital. By tampering with the file, Wyche allegedly had an accounts payable computer run send checks for $36,222 and $3,000 to his address.

Investigators from the Maryland Attorney General's office found the checks, meant to pay invoices from companies in Milwaukee and Atlanta, had been cashed with forged signatures and deposited in Wyche's personal bank account. The investigation was initiated after the Milwaukee firm notified the hospital it had not received its money.

In a classic case of locking the barn door after the horse has been stolen, a security audit by Coopers & Lybrand got under way last week. Hospital officials had been aware of "weak internal controls" in the data center operations since last May, according to Robert Ginn, director of finance and systems.

"We were aware of the general weakness in DP security," Ginn said, explaining that the process of obtaining university and state approvals for the security audit lengthened the effort to do anything about the situation. Wyche was hired without a security check last September, according to Ginn.

Security Instituted

Since Wyche's arrest Jan. 14, the data center has instituted a security system for tape and disk file access and a search continues for any additional missing monies, he said, although at this time there is no reason to believe other checks have been diverted.

If nothing else, the incident has brought home to the university's computing community the need for better data security procedures, according to another hospital official. The official, who requested anonymity, said, "they just don't understand the idea of the word 'security.

"Academic computing types don't know what the word means and actually find it an annoyance becaose it limits the freedom to which they're accustomed," said the official, who described the fight for better security procedures as "uphill all the way.

"The concept of EDP security was relatively novel to those who do computing [here]," he said. "I was told it was a red herring."

Ginn generally agreed with that assessment, speculating the alleged computer fraud will motivate the university to take a harder look at security procedures.

Ginn said he had had his own doubts about security when the hospital data center's IBM 370/148 system was running under VS1/VM with CMS. The system has recently been converted to VS1/CICS, according to Ginn, who said use of CMS and the widespread system access it allowed could have resulted in a more serious, or at least harder to trace, security breach.

While Wyche's alleged scheme was not very sophisticated and was discovered with little difficulty, "somebody with a few brains coming in on CMS could do just about anything," Ginn said.

Besides the hospital's business applications run on the 370 system, the data center also operates four DEC PDP-11/70s, Ginn said. With a staff of more than 60 people and a budget exceeding $2 million, the data center also provides limited support for some campus business functions and for scientific research projects.

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Micros Help Pro Astrologers Prepare Celestial Calculations

By Bob Johnson
CW New York Bureau

NEW YORK — Trying to find out if your moon is in its seventh house or if you are a fire sign may not be your idea of the most practical or even worthy use of a computer, but to many serious astrologers and students of astrology it is becoming a way of life.

The New York Astrology Center, which houses Astrology Services International (ASI), a consulting and information company for professional astrologers, provides services and sells complete systems for astrological chart consultations.

Stocking Apple Computer, Inc. Digicomp Research DR 70 and Personal Micro Computer, Inc. PCM 80 microcomputers for their customers, who include Dane Rudhyar, a well-known French astrologer, ASI said professionals are extremely receptive to the computer in their trade. The use of micros spurred ASI into the dealer end of hardware.

To the layman, astrology may appear to be a lot of mumbo jumbo, but as ASI President Henry Weingarten pointed out, "Astrology has its basics in mathematics as does computer programming. The chart consultations are based on planet positions and learned repeated observations."

Quicker Calculations

Calculations requiring the mathematical positioning of the planets that took 10 to 15 hours in the past can now be done on one of the micros in less than an hour.

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At Top Secret '81 Conference

Issues of Transborder Data Flow Seen Missed

By Tim Scannell
CW Staff

MONTE CARLO, Monaco — The focus on regulating transborder data flow has stolen attention from the real issues of transborder data flow — the impact that disseminating information has on humans and how that information should be handled once it crosses international boundaries.

That concern was voiced here last week by Prof. Knut S. Selmer, chairman of the Norwegian Research Center for Computers and Law in Oslo. Speaking here at the First International Symposium on Computer Security and Privacy (Top Secret '81), sponsored by CII-Honeywell Bull, Selmer observed that all the "real issues" of transborder data flow have not yet been determined.

First of all, it is absolutely impossible to regulate or in any way impede the flow of data across international borders, he explained. Drawing on history, Selmer pointed out that during World War II the Germans tried to restrict information by confiscating all of the radio receivers in his homeland, Norway.

Furtunately, the Norwegians managed to keep the bulk of their radios and used any information received to ward off the influence of the German propaganda machine.

Likewise, signals and computers cannot be controlled, but yuu can regulate the way received information is used by a country or by an individual. For instance, in the case of pornographic material, while an individual may collect allegedly indecent photographs or written text there are laws restricting him from circulating it throughout the neighborhood, Selmer said.

By the same token, however, every nation, including technically retarded Third World countries, should be wary of just who is developing any information-regulating laws.

"Rich people are discussing how to get richer still by using a very complicated technology," he remarked. "And it's not fair."

OECD Inroads

There are, huwever, some inroads being made toward the develupment of workable transborder data flow laws. Last year, the Organization for Economic Cooperation and Development (OECD) adopted certain recommendations concerning privacy and international data flows. OECD member countries were scheduled to sign these recommendations into law Jan. 28.

The OECD's basic transborder data flow principles cover: the collection of information, data quality, the purpose of data collection, certain use limitations, security safeguards, accessibility to this information, participation by the individual involved and an accountability factor that makes the collector responsible for any data misuse.

"Science fiction authors have demonstrated what could happen if there are no laws or directions," Prof. Hansc Peter Bull, a lawyer with the Chamber of Commerce in Hamburg, West Germany, stated.

Some important aspects of the proposed OECD rules include the fact that any data collected must be collected by lawful means and with the concerned individual's knowledge. The rules also state that the collection purpose, specified at the collection time, should not differ from the actual use, and that the data should be relevant, complete, accurate and up-to-date, Bull noted.

Finally, Michel Albert, the commissaire general au plan in Monaco, told the international gathering to search not only for technical solutions, but for legal, psychological and physical solutions as well. In other words, be aware of the political ramifications of transborder data flow laws.

A nation's "castles" can no longer be protected with lock and key under the English-bred law of habeas corpus, but must be safeguarded with rules, Albert said.

Not Everyone in Monaco Came to Kick Up Sand

MONTE CARLO, Monaco — Nearly 450 of the people who visited this tiny French resort last week did not arrive just to watch the town's famous road race, which ended this weekend, or to kick up some sand on its Mediterranean beaches.

Instead they came from places like Morocco, Saudi Arabia and 15 other countries to discuss such issues as transborder data flow, data security and individual privacy. Topics that should seem as distant to residents and sun-soaked vacationers here as an IBM mainframe is to Monaco's winding Route de la Moyenne Corniche, which cuts jaggedly across this principality's villa-studded width.

Sponsored by Honeywell, Inc.'s European cousin, CII-Honeywell Bull, the First International Symposium on Computer Security and Privacy (Top Secret '81) broke all the attendance records claimed by Honeywell's six previous privacy seminars held in the U.S. In fact, last week's three-day meeting at Monaco's Centre de Congress auditorium was the fourth largest symposium of its kind in the world.

During the all-day sessions, the speakers' deliveries were simultaneously translated into three languages — French, English, and German. Although a number of speakers, such as Donn B. Parker and Jack Bologna, are American, there were very few people from the U.S. in attendance.

However, although not many American representatives were here, the subject of U.S. DP was very much present. Although discussions of U.S. privacy and computer protection legislation was often heavy, there were some light moments in the auditorium. For instance, near the conclusion of his speech, Michel Albert, Monaco's commissaire general au plan, outlined some comparisons between America's term for a microprocessor and France's version.

In the U.S. the micro is called a "chip," which, he said, gives the pleasant thought of french fried potatoes. But the French translation of the word "chip" means fleas, which conjures up visions of the insect pest.

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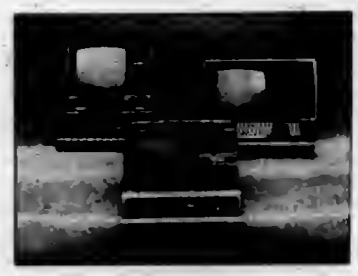

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FAA Suspends Controller in Soviet Plane Case

By Marguerite Zientara
CW Staff

NEW YORK — The Federal Aviation Administration (FAA) has suspended for 60 days an air traffic controller accused of removing data from computerized radarscopes and contributing to the "potential endangerment" of a Soviet airliner approaching Kennedy International Airport a year ago [CW, Feb. 11, Oct. 6].

Gerald F. O'Brien, reportedly the first controller ever charged with tampering with air traffic control equipment, was scheduled to begin his suspension period Jan. 24.

A second controller in the incident, Richard E. Kelsey, who faced a possible 30-day suspension on charges of being "negligent by not controlling the use of equipment" under his jurisdiction, drew an FAA reprimand, according to air traffic division chief Norbert Owens of the FAA's Eastern Region.

While the agency recommended a 30-day suspension for Kelsey and dismissal for O'Brien last September, the pair received the lighter penalties after extensive review of the case by Owens.

"Through my own review process, I considered the facts of the case, my subjectivity in the determination of the intent of the individuals involved, their past work records, the accomplishment of what disciplinary action is intended for, which is to improve the performance of employees, and I decided that it makes sense to go with the dispositions set," Owens commented.

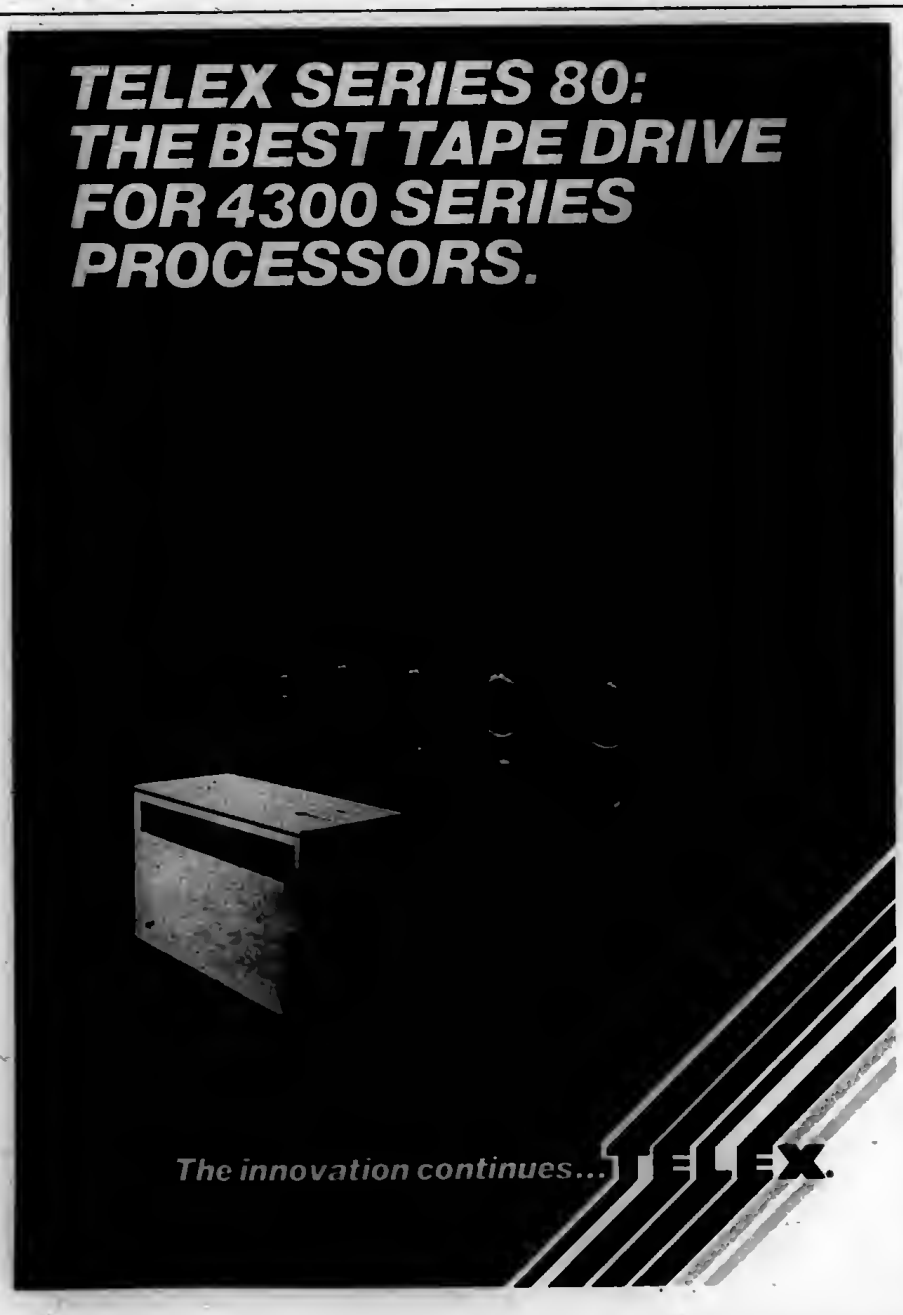
In last January's incident, a Soviet Aeroflot airliner carrying Ambassador Anatoly Dobrynin flew about six miles at the wrong altitude in the normally crowded skies over Long Island.

Observers at the time commented it was "just plain lucky" the jet was not actually endangered. The FAA's September announcement of its recommendation to dismiss O'Brien said that "precise deliberate keyboard entries" had been made "at a specific control position" during the incident.

The announcement also indicated that "important flight data" concerning the airliner had been "deliberately erased" as the jet approached.

The event came at a time when the local chapter of Air Traffic Controllers Organization (Patco) was publicly opposing the handling of Soviet or Iranian planes because of the Soviet intervention in Afghanistan and the holding of American hostages in Iran.

Daniel Markewich, O'Brien's lawyer, said he was "as yet undecided" whether or not to appeal the ruling. Kelsey's lawyer, Lawrence Goldman, indicated he "tentatively" expected to appeal, remarking, "In our view, the reprimand is unwarranted; Kelsey did nothing wrong."



Fellowship Open From Babbage

MINNEAPOLIS — The Charles Babbage Institute for the History of Information Processing is accepting applications for a graduate fellowship to be awarded for the 1981-1982 academic year.

The fellowship will be presented to a graduate student whose dissertation deals with some aspect of the history of computers and information processing. The stipend awarded will be $5,000 with an amount up to $2,500 for tuition and fees.

Applications should include biographical data and a research plan or design. Applicants should arrange for three letters of reference, certified transcripts of college credits and GRE scores (or their equivalents abroad) to be sent directly to Prof. Roger H. Stuewer, acting director, The Charles Babbage Institute, University of Minnesota, 104 Walter Library, 117 Pleasant St., S.E., Minneapolis, Minn. 55455 by April 15.

Babbage Institute Seeks Directors

MINNEAPOLIS — The Charles Babbage Institute for the History of Information Processing, established to promote the study and awareness of the technical and socioeconomic aspects of the computing and information revolution on society, is accepting applications for permanent staff.

The two positions consist of a director and associate director who will help develop an archival program, including an oral history program, and will promote the use of these materials through teaching, research, fellowships, conferences, public lectures and the like.

In addition to the director and associate director, the staff will consist of an archivist.

The Institute is seeking as director an established historian of science and technology or scientist/engineer with demonstrated abilities and achievements in the history of computing. The associate director should be a scientist/engineer with demonstrated abilities and achievements in the history of computing or a historian of science and technology.

Applicants should submit a resume, including the names of at least three references, to Prof. Roger H. Stuewer, School of Physics and Astronomy, University of Minnesota, 116 Church St., S.E., Minneapolis, Minn. 55455.

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Should Staff Blow Whistle on License Breach?

Turnaround Time
By Larry E. Bond

Q Our company purchased some software recently for which one of the company's officers had to sign a single-CPU usage licensing agreement. Our company also contracted out some work to a consultant.

Knowing ahead of time that the consultant would need to use the purchased software on his system in order to complete the work, I notified my superior (an officer of the company) that there was a conflict between the license agreement and allowing the consultant to use the purchased software on his system. I informed my superior that this conflict would have to be addressed and resolved.

When the consultant arrived to discuss matters as well as obtain a copy of the purchased software, I was told by my superior to copy the software. I refused because the conflict had not been resolved.

My superior then informed me to tell another to do the copying, which I did because I was not prepared to fight my last stand at that moment. My superior justified the copying because the consultant would use it only for a short time; there was a physical distance between our company and the consultant's place of work which prevented him from coming in on a daily basis; and if the consultant did come in, then there was no way that we could reasonably prevent him from copying it anyway.

I did not consider any of these reasons valid, for I felt it was a question of professional ethics.

Some time has passed now, but I will not forget this incident. I still do not feel comfortable about what happened. Should I have made an issue out of it? Should I have taken more (or less) action than I did? Should I still "blow the whistle" and inform the vendor that my company illegally copied their software?

A The breach of a legally binding agreement cannot be condoned, but it's water under the bridge now. A more appropriate action would have been to explain the situation to the vendor and ask permission for the consultant to use the proprietary software on his systems.

Given that the consultant would agree to use the software on contract-related work only, the vendor would probably approve such a request. By granting permission, they gain your goodwill and an opportunity to gain another customer.

The appropriate procedure would have been for the consultant to write a letter confirming its limited-use intent. After receiving a satisfactory letter, the vendor would then follow up with an approval letter to both your company and the vendor.

If the vendor refused, your company should have asked the consultant to make arrangements necessary to complete the work within the framework of the licensing agreement.

Q The letter complaining about the lack of positive feedback sounded to me like an opportunity to remind managers that it costs them nothing to say "thank you." The cost of neglecting those two simple words can be the loss of a valuable employee.

Even though the employees may be getting a great deal of personal satisfaction from knowing they handled a challenge well, the victory is empty when no one else appears to notice. It should be obvious that an employee's productivity will go down when he or she is demoralized and frustrated, and personal satisfaction goes away once productive labor is replaced with frustration.

The alert manager would do well to say thanks fo acknowledge exceptional work. Does anyone else remember the old rhyme that begins, "For want of a nail, the shoe was lost . . ."?

A Heat hear! Thanks for writing.

Q My questions refer to goal setting. I have a B.A. in Business Management and an M.S. in Computer Science. I have three years' experience as a programmer, systems analyst and project leader in the areas of personnel systems, payroll and financial applications. My goal is to move into management of a DP facility.

What's next? I'm trying to decide if I should study hardware or get more training in accounting. What is the training background for most managers? What should I concentrate on to assist me in achieving my goal?

I hope my questions are clear. It is very hard to put them in writing.

A The questions are clear; the answers are not.

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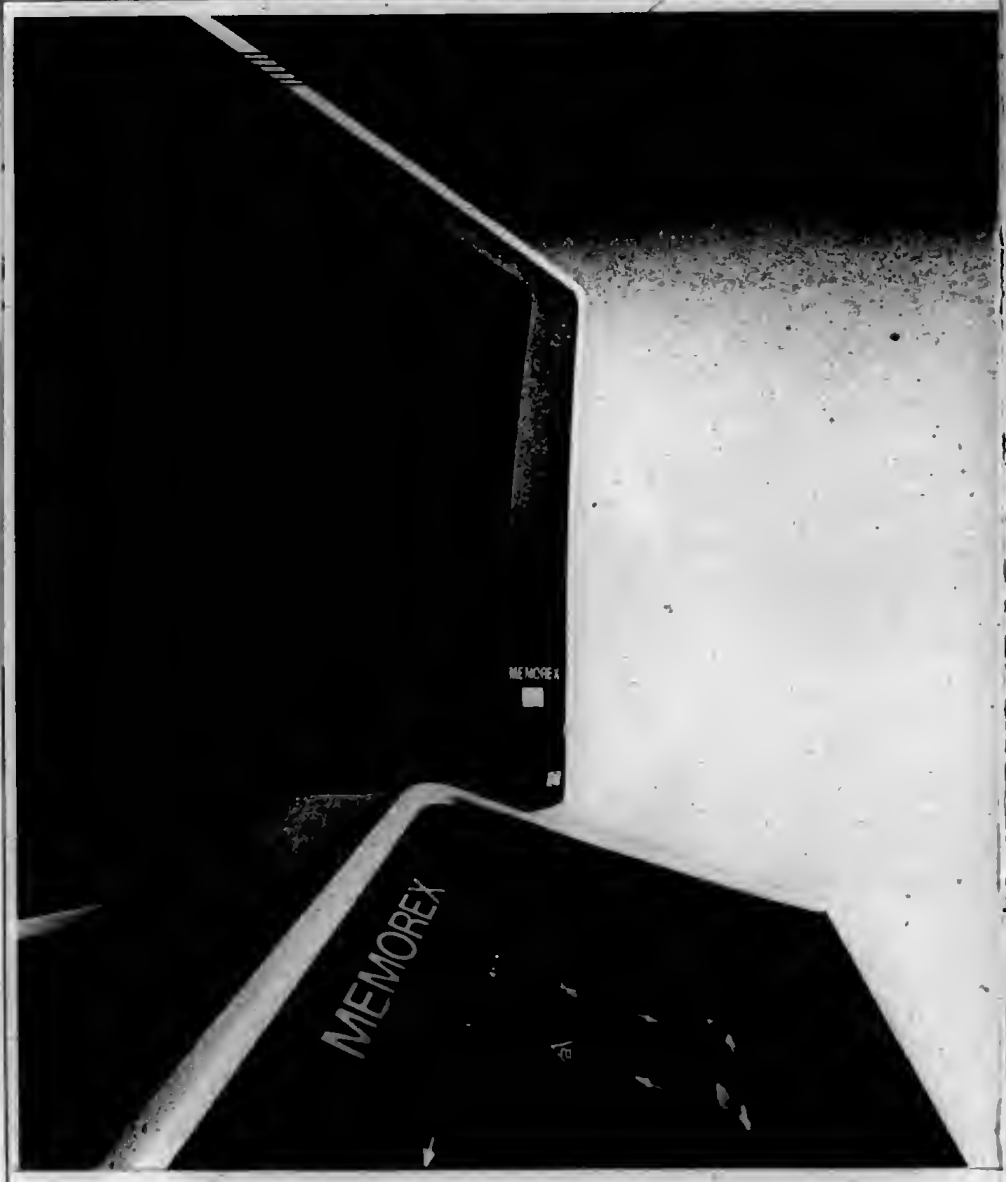
(Continued on Page 28)



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Larry Long's List of Professional Groups

Larry Long is compiling o list of professionol DP/computer societies and organizations. His compilation, which started in the Dec. 22 issue, will be continued in future columns. To be included, societies and orgonizations should send o brief description of their purposes and objectives to Larry Long, Editorial Department, Computerworld, Box 880, Framingham, Mass. 01701.

— — —

• Association of Computer Programmers and Analysts (Acpa).

Purpose ond objectives: Acpa believes that working programmers and analysts must have part in shaping their destiny.

Founded in 1970 by a group of very concerned individuals, Acpa has consistently addressed issues of importance to the working professional in the data processing field. Acpa is concerned about matters such as technical obsolescence, professional performance standards, the outside regulation of those in data processing and continuing education.

To this end, Acpa focuses the interests of its members on matters of importance through annual conferences, seminars and publications. From the date of its founding, Acpa has had the acceptance of a strong personal code of ethics as a condition of membership.

For more information: Acpa National Headquarters, 294 Main St., E. Greenwich, R.I. 02818, (800) 556-o882 (toll-free).

• Society for Computer Applications in Engineering, Planning and Architecture (Cepa).

Purpose and objectives: A nonprofit organization whose primary goal is to further the effective application of computers in engineering, architecture and related fields, Cepa is especially interested in promoting cooperative development and exchange of relevant computer programs and systems. Cepa maintains a program library consisting of approximately 350 software programs written by members and holds semiannual conferences at various locations in the U.S.

Founded in 1965, the organization publishes a quarterly newsletter, a complete set of one-page abstracts for programs currently available to members, a directory of hardware and software vendors and user groups recommended by Cepa members, conference proceedings and various special reports.

For more information: Patricia C. Johnson, Executive Director, 358 Hungerford Drive, Rockville, Md. 20850, (301) 762-6070.

• Data Processing Management Association (DPMA).

Purpose and objectives: DPMA is engaged in education and research activities for the self-improvement of the membership, a diverse group of DP professionals.

DPMA members are managers or supervisors in EDP installations, educators and executive personnel with a direct interest in data processing, graduates of an accredited college or university who are former members of a DPMA student organization; and individuals whose major source of income is direct selling or leasing of DP equipment, supplies or educational cnurses.

The heart of the organization is the local chapter (2o3 chapters), where members have informal but direct contact with their peers. Chapters hold monthly meetings where speakers provide valuable information in areas which are most helpful to on-the-job and career interests of members.

International supplements chapter programs and activities by providing over 250 education programs.

For more information: Edward J. Palmer, CDP, Executive Director, Data Processing Management Association, 505 Busse Highway, Park Ridge, Ill. o00o8, (312) 825-8124.

• Hospital Information Systems Sharing Group (HISSG).

Purpose and objectives: HISSG is an organization comprised mostly of hospital DP managers (with representation from vendors as well). Its chief function is to assist institutions io this area to share their successes, failures, plans and ideas.

Activities include biannual seminars held in January and July as well as committee assignments.

For more information: Bill Rosqvist, Executive Director, Hospital Information Systems Sharing Group, 2415 South 2300 West, Salt Lake City, Utah 84119, (801) 972-o099.

• Black Data Processing Associates (BDPA).

Purpose and objectives: BDPA's goal is professional development by strengthening the expertise of the minority members of the DP community. It offers this expertise to those minorities who are evaluating data processing for its career/business potential and aims to broaden the data processing knowledge of the minority community as a whole.

Although the objectives of the association are directed towards the minority members of the data processing profession, our membership is open to all persons, in accordance with our current bylaws, regardless of race or sex.

For more information: Earl Pace Jr., Black Data Processing Associates, National Chapter, P.O. Box 2254, Philadelphia, Pa. 10103, (215) 925-1397.

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How Can Ex-Secretary Get First Computer Job?

(Continued from Page 24)

and functional area expertise. Very little emphasis is placed on managerial skills.

As one progresses up the management information systems, (MIS)/data processing management ladder, the emphasis is reversed. For example, a third-level manager might require an equal mix of technical and managerial skills; whereas, the top corporate information services officer is primarily a manager who makes direct application of management skills and uses technical skills as background.

Those managers who refuse to recognize the necessity of this gradual reversal of skills requirements do not make good managers. MIS/DP managers who still prefer mulling over memory dumps to planning are uniformly poor managers.

At any stage of a manager's professional development, it is difficult to identify the proper mix of technical and managerial skills. Maintain a high level of technical expertise as long as it is appropriate.

As you are given more managerial responsibility, begin to emphasize the managerial aspect of your education. This education usually comes in the form of formal professional development seminars, self-study, advanced degrees and observations.

Equally important is career planning. Assuming your company has ticketed you for a fast track to management, your assignments should provide as much exposure as possible to the various facets of MIS/DP operations.

Take advantage of each opportunity in a leadership role to practice and develop good management skills. A tennis pro can teach you the mechanics of a forehand drive, but years of diligent practice are required to perfect the stroke — and so it is with MIS/DP management.

Q I will receive a certificate in computer programming (RPG-II and Cobol) at a trade school and am looking for a job. A recent issue of *Computerworld* listed the salaries in my area of the country as low, but I'm willing to relocate. The problem is that I don't know how to get started.

How does a 24-year-old ex-secretary-now-computer-programmer get a career going? What are the pitfalls I need to avoid? And how on earth do I get my first job (all the ads say "experience")? Do you have any advice on the subject?

A A certificate in programming from a reputable trade school is sufficient to obtain entry-level professional employment, especially in the existing seller's market. At a minimum, a reputable trade school should offer employment counseling and, hopefully, placement services. Good trade schools are realizing a high rate of placement.

Although most of the CW classified ads express experience requirements, that does not mean all openings require experience. If your school does not provide placement services, your best bet may be the classified section of your local newspaper.

Your primary objective is to find a position that has the potential to provide you with marketable experience. If possible, avoid an entry-level position in a unique environment (hardware and software) unless you intend to stay for a considerable length of time. The uniqueness of an environment may tend to negate the worth of some of the experience that you might gain.

Don't accept an operations position with the promise of programming "later," unless the company has an established precedent for this career progression.

Q We recently placed an order for an IBM 4341 to take the place of a time-sharing service. We used it to provide interactive programming support for our engineers. At this time, we are in the process of selecting an operating system and time-sharing support software.

For the last several years our engineers have become familiar with TSO through the time-sharing service. Our options are MVS, which supports TSO, and VM/370, which supports CMS.

The reaction from the programming staff and engineers is mixed. Do you have any feeling for which software we should select?

A The choice as I see it is between TSO and CMS. TSO has been around a long time, but presumably IBM has made improvements in time-sharing software. Your investment in TSO is a "sunk cost" and should not be a factor in the evaluation. The feedback I've received is that CMS is easy to learn.

Not knowing important details, I am reluctant to make an across-the-board recommendation, but as a rule of thumb, go with state-of-the-art technology (but don't be first).

Have a question? Send it to Larry Long, Editorial Department, Computerworld, Box 880, Framingham, Mass. 01701.

Long is a professor at Lehigh University, a DP consultant and author.

Ethnotech, Inc. is pleased to annouce the 1981 offerings of its highly acclaimed **Technical Leadership Workshop (TLW).**

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AT&T Calls Objections to Service 'Premature'

By Phil Hirsch
CW Washington Bureau

AUSTIN, Texas — Objections filed by the Texas Newspaper Publishers Association to an upcoming AT&T trial of an electronic directory service here are "premature" and should be rejected, the phone company said in a response submitted to the state public utilities commission earlier this month.

Bell argued that, under commission rules, the newspaper publishers' objection cannot legally be considered until a commercial service is proposed.

AT&T added that the trial will involve no charges to users and is intended only to gather information.

Japan Lifts U.S. Restraints

WASHINGTON, D.C. — Japan has tentatively agreed to lift restrictions on the termination of its international circuits in the U.S.

The effect of the restrictions has been to severely limit the data base services U.S. time-sharing firms can offer Japanese users, thereby giving domestic Japanese time-sharing firms a competitive advantage.

Control Data Corp, Tymshare, Inc. and General Electric have been the U.S. firms primarily impacted.

The tentative agreement results from lengthy negotiations between Reubin Askew, the Carter Administration's special trade representative, and officials of the Japanese telecommunications administration.

The key provision removes the requirement that an international circuit provided by the Japanese international carrier KDD must be terminated at a single point in this country.

Negotiations are reportedly underway between KDD and the U.S. companies aimed at establishing new termination terms.

Managers' Course To Highlight Assertiveness

SMITHFIELD, R.I. — How to be assertive, not abrasive, is the focus of "Developing Assertive Management Skills," a one-day seminar being conducted by the Center for Management Development. The course will be held in Newton, Mass., on Feb. 4 and again at Bryant College here on March 4 and April 8.

Independent management consultant DeAnne Rosenberg will present the course, which is intended for all supervisors and managers wishing to improve their ability to work effectively with others at all levels.

The fee for the course is $110 and includes all refreshments, lunches and materials. Registration information can be obtained from the Center at Bryant College, Smithfield, R.I. 02917.

Datacomm Briefs

FCC Grounds SBS Satellite

McLEAN, Va. — The satellite communications service Satellite Business Systems (SBS) planned to begin this month has been delayed for technical reasons "until middle or late February." The SBS satellite's orbit has to be changed, customer earth station antennae have to be repositioned and additional transmission tests are needed.

All of the delay results from Federal Communications Commission decision last month, which assigned the company a new orbital slot.

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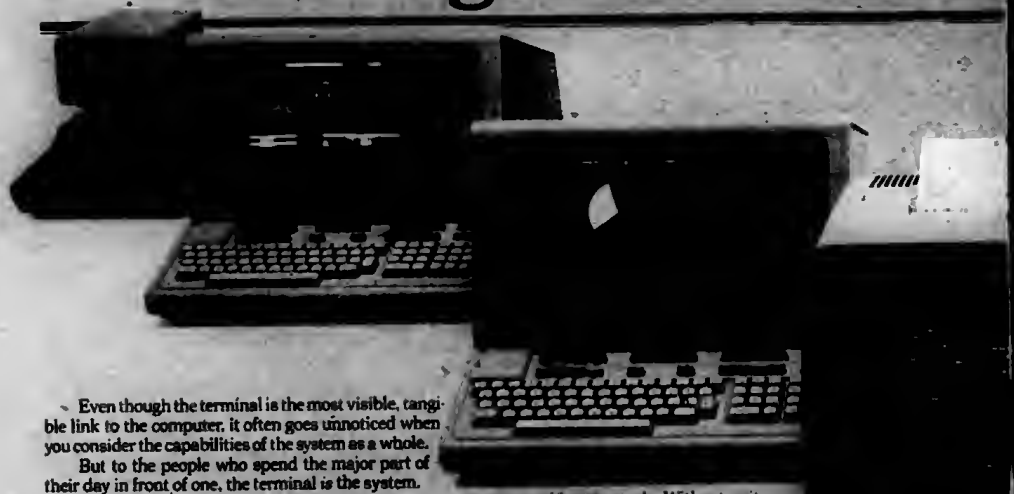

Even though the terminal is the most visible, tangible link to the computer, it often goes unnoticed when you consider the capabilities of the system as a whole.

But to the people who spend the major part of their day in front of one, the terminal is the system.

That's why at HP, we design our display terminals from the users' point of view. Because the easier it is for them to do their jobs, the more jobs they can do. And the better they'll be able to do them. The result? A more productive system all around.

Matching the terminal to the job.

Most data entry jobs call for a lot of time in front of the terminal—usually by people with little or no computer experience. That's why we offer terminals with easy-to-read displays; simple, typewriter-like keyboards with screen-labeled control keys for easy access to a wide range of functions; and block mode on most terminals to make editing a breeze.

If you do much program development, you need to view and re-view a lot of data. So we build our terminals with off-screen storage and scrolling capabilities to help you get the entire picture. Some models have built-in thermal printers for instant hard copy at the touch of a key. And our newest terminal has two data communications ports and a split screen capability that lets you compile, execute, monitor and edit programs as if two stations were available.

Data analysis? Take a look at the capabilities of our graphics terminals. Without writing any new software for your computer system, you can plot line graphs, bar charts, logarithmic graphs and more. All with just a few simple keystrokes. Add one of our high-performance, multi-color plotters and you've got a full-function graphics workstation.

Performance on display.

All HP display stations are designed with high resolution character cells to give you a sharp, clear picture. Some models have soft keys that you can define yourself for specific or repetitive tasks; line drawing modules that make it easy to design familiar forms on the screen; and local mass storage to turn your terminal into a true local workstation. Even international character sets are available.

Look at it this way.

4200S

Latest Round of FCC Hearings

AT&T Service-Call Hikes Called Unjustified

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — AT&T has failed to justify the big increase in service-call charges it imposed late last year on private-line customers who provide their own terminals.

So said the North American Telephone Association (Nata) in the latest round of continuing Federal Communications Commission (FCC) investigation into the new rates. Nata is a trade association representing independent manufacturers of telephone terminals, private branch exchanges (PBX) and similar interconnect equipment.

For most private-line users of independently made voice and data terminals connected to private lines, the new tariff increases the charge for each service call by more than 600%, i.e., it rose from $11.35 to $80 [CW, Nov. 27]. Users of Dataphone Digital Service (DDS) who provide their own terminal equipment are paying nearly 300% more — $80 now instead of $27 formerly. Meanwhile, rates for customers employing telephone company-provided terminals remain the same.

A key issue in the commission's investigation is whether the increases are anticompetitive.

Earlier, AT&T provided one answer when it told the commission that the maintenance service provided to users of non-Bell terminals is "neither like nor similar to" what users of telephone company-supplied terminals receive.

As a result, the "maintenance of service charge" (Mosc) imposed on the former group cannot be discriminatory, Bell added. "There can be no discrimination, let alone unlawful discrimination, unless 'like' service functions are involved."

Concern Voiced

Both AT&T and GTE Service Corp. expressed concern about what the latter called an "implication" in the FCC investigation — that the presently bundled troubleshooting charge for telephone company-provided terminals should be unbundled.

GTE said that if its operating companies "were required to charge their customers on an itemized basis for trouble-isolation work . . . this would amount to a prescription, denying the customer valuable options while serving no public interest."

At the same time, it would "clearly be inappropriate and unlawful" to make the telephone companies provide trouble-isolation services without allowing them to charge extra in cases where the trouble is due to an independent manufacturer's equipment.

According to Nata, however, AT&T's statement that the troubleshooting services it provides its own terminal customers differ from those provided to others constitutes an admission of "discriminatory behavior."

Just because AT&T has chosen to treat the two groups differently, it should not be "permitted to perpetuate a discriminatory tariff," Nata contended.

Bundling the service-call charge in with the monthly fee for use of a telephone company-provided terminal makes it impossible for the FCC to find out whether the former charge adequately covers the related costs, the association added.

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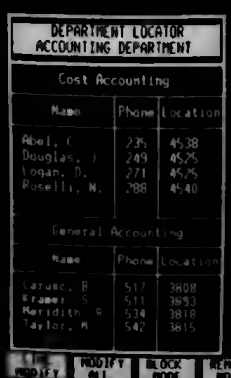

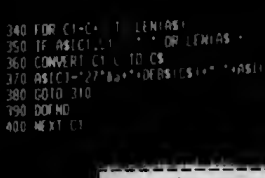

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Third-Party Market for 4300s Found Budding

CHAPPAQUA, N.Y. — From the dust of a dawdling economy skidding on record-high interest rates has risen a budding third-party market in IBM 4300 series CPUs, according to the *Computer Price Guide's* recent quarterly report.

But a protracted period of high interest rates extending deep into 1981, coupled with general economic uncertainty, could check third-party growth across the board, said Computer Merchants, Inc., a vendor of new and used IBM equipment and publisher of the guide, known as the "Blue Book."

"It will now be even harder to compete with IBM's lease rates, and dealers will find it very expensive to finance buy/sell transactions," the report said. "We might see a trend toward more brokerage activity, where the buyer and seller handle the financing of more transactions."

Premium for 3350

Meanwhile, the growing demand for more storage has fostered an overheated market for used 3350 disk drives, where a used 3350 now sells about 10% higher (10% premium) than a new one, the report said. William Hegan, secretary and treasurer of Computer Merchants, Inc., said a used 3350 is available "at those premiums within 30 days."

Since IBM cut its 3350 price in June 1979, the system has behaved "like wine, appreciating with age," the report said.

"It is clear that the marketplace disagreed with IBM on the price of 3350 equipment," the report said. "Demand pushed the relative percentage sky high and actual prices for used units increased to a level not seen since January 1979, when IBM's list price was $50,000.

"It would appear that IBM totally miscalculated the demand for disk storage," the report continued. "How else does one explain the 20% price reduction in June 1979? IBM's inability to deliver has benefited the used market. At 110%, a 3350 cannot be described as a good buy, but for many it is the only show in town."

The guide, however, characterized the demand for most 360, 370 and System 3/10 CPUs as weak at best, saying of the 370/138-148, "never before has IBM brought out a CPU with such a short [five-year] life span."

The 370/158 market is getting it from both ends at once, the report said. Large 370 users are "migrating in droves" to the different 3033 models, while the new 4341 has curried favor with the small 370 users.

Used 4341s

Due to its relative newness, the 4341s have not appeared yet on the used market, the report said. New ones are available from third-party leasing companies, but at premiums of up to 20%. Some customers, however, have demonstrated a willingness to pay the third-party premiums in order to get more timely delivery of a 4300.

The guide expects the anticipated strong demand for the 3081 to result in similarly steep third-party lease premiums for early order positions of the new CPU. Computer Merchants' Hegan declined to speculate on just how steep, but said, "We'll all know very shortly when IBM releases actual delivery dates."

Finally, the report listed the System 3/15 as one of the best buys on the market today.

"A used 3/15 can be had for about one-half the price of a new 38, so it would be an excellent choice for those users who are just upgrading from a small System 3 and may not be ready for the conversion to System 38 software and peripherals," the report said.

"Because of the large number of System 3/15s now available, we believe prices will continue to decline during the first quarter of 1981 and buyers should be on the lookout for good buys in this market."

Workshop Slated On Productivity

ROCKVILLE, Md. — Five-day workshops on "Personnel Productivity in Data Processing — How to Assess, Supervise and Administer Computer People" will be conducted in four cities by Keston Associates.

The "comprehensive review of the key factors bearing on the management and supervision of computer people" will be held in Fort Lauderdale, Fla., Feb. 9-13; Washington, D.C., March 16-20; San Francisco, April 27-May 1; and Annapolis, Md., July 20-24.

The workshop fee is $795 per person. Keston Associates is at 11317 Old Club Road, Rockville, Md. 20852.

Q.E.D. Booklet Details First-Half Courses

WELLESLEY, Mass. — Q.E.D. Information Sciences, Inc. is offering a free booklet detailing the January-June 1981 courses the firm will offer as part of its EDP Education Program (Edpep).

Including 71 workshops to be held at six regional learning centers, the courses are software- and systems-related, embracing such areas as data base, data communications, systems development, project management, quality assurance, systems and DP management and DP auditing.

The firm is located at Q.E.D. Plaza, Box 181, Wellesley, Mass. 02181.

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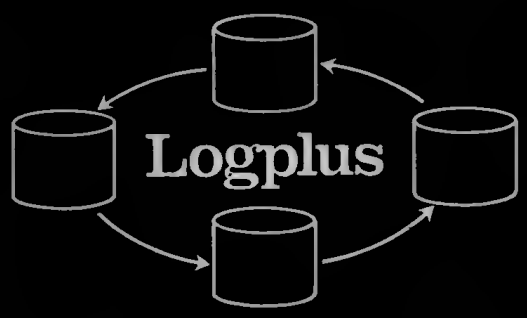

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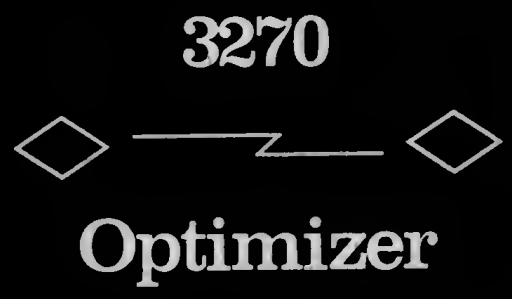

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Magazine's System Handles 1,200 Transactions Hourly

CHICAGO — A stand-alone remittance processing system is reportedly enabling *Guideposts* magazine to process up to 1,200 renewal and payment transactions from one operator at one station each hour.

Such performance has been a boost to the magazine, which has a circulation of 3.5 million and processes more than nine million pieces of mail each year. *Guideposts* is the first user of the system, named Checkmate by its vendor, Charter Data Products, Inc.

Checkmate scans, verifies, Micr-encodes, endorses and prints audit trail information and microfilms optionally in addition to other capabilities, according to Morris Frydman, Charter's executive vice-president of marketing. Its own minicomputer also makes the system self-sufficient and capable of handling applications other than remittance processing, he added.

"We are very pleased that *Guideposts* has become the first customer of Checkmate," Frydman said. "In the first month of operation, we processed 100,000 renewals and payments. We also plan to use the system for order entry processing."

Special Features

The company had been searching for additional remittance processing capabilities to augment the machine it used in the past. Management was impressed at the outset by two things: first, the option of programming the system however and whenever desired and second, the fact that Checkmate was designed by people who actually use remittance processors to conduct their own business.

The firm felt a user would be most sensitive to the problems and concerns unique to remittance processing. "We ordered Checkmate sight unseen and our initial impressions have been borne out," Lee Keck, director of operations, said.

"Two weeks after delivery, Charter had written a software program for us, installed the hardware, including an optional audit trail printer, and trained our personnel," he added.

Checkmate has been productive since the first day of operation and the Charter people have continued to be knowledgeable and responsive to *Guideposts'* needs, he declared.

Users Pleased

The people who use Checkmate are also pleased with the system, Keck noted. Two staff programmers successfully designed a second program in a short time using Charter's Block-Oriented Logic Design (Bold) software package, and are confident further system programming will be accomplished as easily and quickly as this first endeavor.

Operators have also been impressed with the practical design of Checkmate, notably the system's easy-to-read screen, the size and shape of the keyboard which facilitates handling and the fact that all processing is accomplished within each operator's one workstation with minimal operator movement required.

In addition, operators claim errors are simple to correct because the system explains step-by-step procedures. Machine jams, though infrequent, are easily remedied too, the director maintained.

The *Guideposts'* users remarked that Checkmate allows them to scan varying locations on a document and praised the OCR reader for its print quality. Another advantage of the system is its cost-effectiveness. Start-up time for any operation is fast and only one operator at each station can process many transactions quickly, he said.

The system's single-track, straight-line transport enhances system flexibility and extensive diagnostic capabilities reside in firmware. Service support includes nationwide sales and service offices and a staff of customer engineers, system support analysts, high-level technicians and software specialists.

The system is applicable to many kinds of remittance processing applications, including banking, insurance, utilities, government, publishing, fund raising and subscription fulfillment.

Course Planned On Productivity

TEMPE, Ariz. — "Using Performance Management to Improve Productivity" is the theme of the 1981 Conference on DP Performance Management to be held here Feb. 23-26.

The event is being cosponsored by Applied Computer Research, Inc., publishers of the *EDP Performance Management Handbook and Review*, and Performance Management Associates, Inc., an independent consulting group.

The program is recommended for information processing managers and top-level staff seeking to improve the management and productivity levels in their respective organizations. The four-day event encompasses hardware/software monitoring, modeling in planning, fulfilling user service objectives, data entry, application development aids, implementation and more.

Registration rates are $350 for regular enrollment and $315 for subscribers to the *EDP Performance Management Handbook*. Further details can be obtained from Applied Computer Research, P.O. Box 9280, Phoenix, Ariz. 85068.

USC Law Institute To Cover DP Rights

LOS ANGELES — The University of Southern California Law Center is sponsoring its second annual Computer Law Institute, an in-depth program on proprietary rights and computer contracts, on May 14-15 here.

Trade secrets, copyright and patent protection of software, chip technology and home computers will be discussed on day one, and user/seller contracts, multivendor problems and tort liability will be addressed on day two.

The cost of the program is $125 for one day, $200 for both. Additional information is available from Ami Silverman, USC Law Center, University Park, Los Angeles, Calif. 90007.

Privacy Suit Dismissed; Use of SSNs Upheld

By Marguerite Zientara
CW Staff

BOSTON — A 1977 class action suit filed here to stop the compulsory furnishing of Social Security numbers (SSN) of children whose parents receive Aid to Families with Dependent Children (AFDC) [CW, May 29, 1978] has been dismissed except for a clause requiring the government to explain to families why it requires the SSNs.

Since January 1975, the Welfare Enumeration Project of the U.S. Department of Health and Human Services (HHS) — formerly Health, Education and Welfare — has required all recipients of AFDC, including children, to report their SSNs in order to receive benefits.

Massachusetts, however, did not require the SSN for AFDC benefits until February 1977 because "the State Welfare Department says it somehow postponed it," according to Jacqueline Dittrich, a founder of the Welfare Enumeration Emancipation Program (Weep), the statewide group that filed the suit.

A number of appeals against the SSN program were heard and denied from February through May of 1977, and in June 1977 the suit was filed, charging the SSN regulation was an invasion of privacy.

In January 1978, the state's denials of appeals began to include termination of benefit checks, Dittrich reported.

May Decision

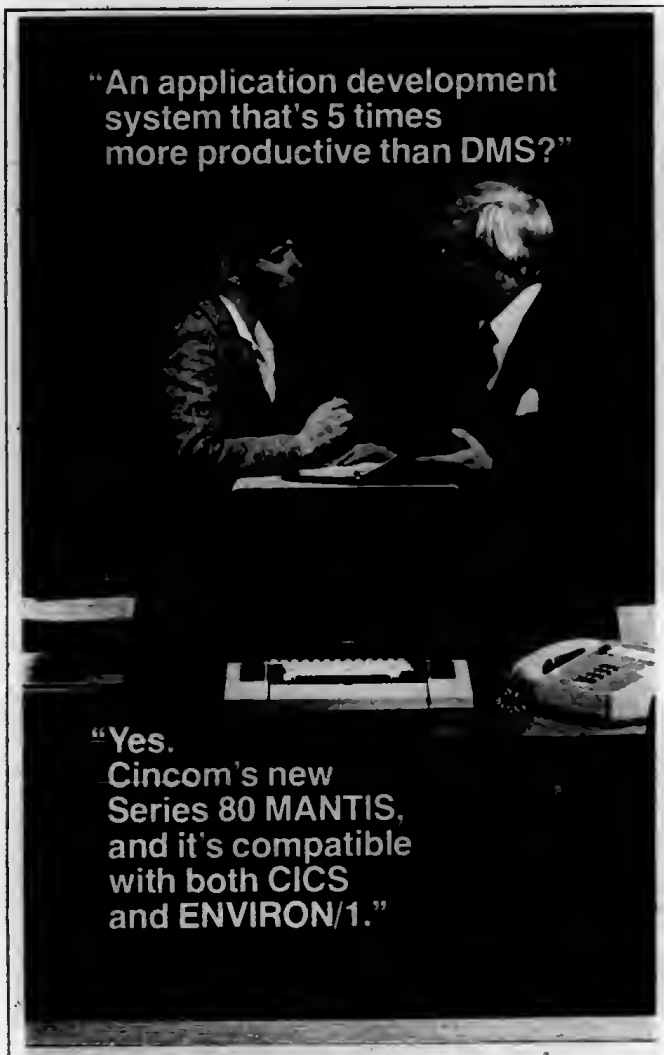
In U.S. District Judge Rya W. Zobel's decision, handed down last May, she called HHS conduct in failing to inform welfare applicants and recipients about the use of SSNs "the ornery attachment to enigma which the legislative history of the Privacy Act of 1974 suggests and which [the SSN information clause] was designed to prevent."

According to the working timetable in the case, the first notices informing AFDC recipients of all the uses of SSNs will be included with "the first pay cycle in April," according to Tony Winsor, an attorney at the Massachusetts Law Reform Institute who represents Weep.

Fourteen days after that, HHS will begin informing all new applicants to the program. The delay is due to "logistical problems," Winsor said.

While the wording of the notices is still being negotiated, the following points are expected to be included:

- The SSN of the person who actually applies for AFDC is used as an identification number, to keep track of the files in the case.
- The SSN of the applicant is "computer cross-checked" with other SSNs to determine fraud on the part of "grantee relatives" in the form of unreported wages, or whether relatives are eligible for other welfare programs.
- Children's SSNs are not used for any purpose, but are stored in Department of Public Welfare (DPW) files and federal Social Security Administration files, as required by law. [HHS last week reportedly indicated children's SSNs are used, but the agency had not yet submitted final wording on those uses, Winsor claimed. A DPW spokeswoman confirmed children's SSNs are required to comply with the federal requirement only.]
- [If the wording remains that children's SSNs are not used, the notice will explain that] they may be used in the future for computer cross-checks to detect fraud within a family, to determine eligibility for other welfare programs, or to verify whether persons named in a grant exist.
- [If the wording indicates children's SSNs are not used, the notice will explain that] if the DPW decides to actively use them in the future, the agency will notify all AFDC applicants and recipients, so that anyone may withdraw an application or not apply at all.



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Two Each From IBM, Lanier

Datapro Picks 13 WP Systems for Honor Roll

DELRAN, N.J. — Thirteen word processing (WP) systems have been chosen for Datapro Research Corp.'s 1980 Honor Roll of Word Processing Systems, with two vendors — IBM and Lanier Business Products, Inc. — qualifying with two systems each.

In its survey of 2,164 respondents, Datapro found that few word processing system replacements will be occurring this year and that users are generally pleased with their systems' performance.

The 10 stand-alone systems selected for the Honor Roll from 49 models include the CPT Corp. 8000, the Micro Systems, Inc. 2001, the NBI, Inc. 3000, the IBM OS 6/450, the Xerox Corp. 850, IBM OS 6/430, Lanier LTE-2, Wang Laboratories, Inc. WPS-5, the Lanier LTE-3 No Problem and the 3M Corp. 4000.

Among the multiterminal systems included in the honor roll are the A.B. Dick Co. Magna SL, the A.M. Jacquard Systems J-100 and the Digital Equipment Corp. WS200.

To qualify for the Honor Roll, a product must be rated by at least 15 users, earn an overall satisfaction rating of at least 3.2 on a scale of four, and not be rated lower than 2.7 in any other category in the Datapro survey.

WP Profile

A profile of word processing (WP) users emerged from Datapro's survey results. Stand-alone and multiterminal users prefer to buy rather than lease their systems and as many as 84% did not use consultants in the decision-making process, the survey revealed.

Although DP management heads appeared to have little input into the WP process, the head of the company was involved at least 25% of the time — a key factor for implementation success.

Government offices were found to use word processing equipment most often, followed by education, engineering/scientific, legal and banking users. General business ranked fairly low on the list (eight out of 12), which might indicate that WP is best suited for industries that are heavily laden with repetitive paperwork rather than just letter writing.

Top Applications

Although WP systems are usually thought of as automated letter writing systems, users were found to consider document preparation their principal and most important application with documentation text processing and statistical/scientific applications named next most frequently.

The variety of answers given might reflect a desire to integrate functions on their systems and to use a single WP device for various kinds of applications, according to datapro.

Plans for new acquisitions were generally optimistic with expansion plans totaling over 100% as many users indicated they planned to add several systems or workstations and more options.

Although only 24% and 23% of the users planned to purchase either additional workstations or additional systems from the same vendor, 51% of multi terminal users plan to purchase such equipment. Both types of users also indicated plans for purchase of electronic mail systems, photocomposition interfaces and additional software options.

The survey revealed that few WP users will replace their systems in 1981. As many as 73% of the stand-alone users and 77% of the multiterminal system users said they would not be replacing their systems in the coming year. Of the remaining users, 12% of the stand-alone system osers and 14% of the multiterminal users said they would be replacing their current equipment with machines from the same vendor.

The final group of users — 11% for stand-alone systems and 7% for multiterminal systems — have decided to acquire their next machine from a different vendor.

On the negative side, some problems noted by the users included difficulty in learning to use the system, the vendor-proposed system did not fulfill user needs, and vendor enhancements to system hardware/software were hard to keep up with.

In overall satisfaction, users named Savin Compucorp, Inc. and CPT as the three top-rated vendors. As many as 82% would recommend their stand-alone systems to other users and 86% of the multiterminal vendors would recommend their systems.

Vendors' stand-alone systems that received 100% recommendations included Apple Computer, Inc., Adler-Royal, Compucorp and Savin, and the only multiterminal system with 100% recommendation was Lanier. Some vendors' systems were not ranked very high because users were judging obsolete equipment that they would not recommend.

The "Word Processing Systems Users Rating" report includes detailed comparison columns by individual product as well as summary tables and individual profiles of 49 stand-alone systems from 23 vendors and 19 multiterminal systems from 11 vendors. The report costs $15 from Datapro at 1805 Underwood Blvd., Delran, N.J. 08075.

Decision Support Seminar To Focus on Marketing

CHICAGO — A day-long seminar on "Decision Support Systems for Marketing Management" will focus on the consumer goods industry when it is held here March 5 by Management Decision Systems, Inc.

The keynote speaker will be Dr. John D.C. Little, professor of management at MIT's Sloan School of Management and cofounder of Management Decision Systems. Other speakers include R.W. Struse III, the Carnation Co.'s director of marketing research, and Dr. M.C.A. Van Nievelt, director of corporate management services for the Nestle Co.

A $75 fee covers lunch and materials. Further information is available from Richard Bonzagni, marketing manager, Management Decision Systems, Inc., 300 Third Ave., Waltham, Mass. 02154.

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Over-initiation is a case in point. As you add batch jobs or log-on more TSO or CMS users, the increased job load will eventually result in page thrashing and resource conflict. That threshold can be reached long before your CPU is 100% busy.

As illustrated in the graph, a high-speed paging device, such as STC's 4305 Solid State Disk, will dramatically broaden your system's performance range by decreasing its sensitivity to over-initiation. Faster page response time raises your paging threshold while dedicated paging storage reduces contention on your disk subsystems.

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Our 4305 Solid State Disk is available in a range of configurations to fit your Amdahl, IBM or other compatible processor. With 0.3 msec. access times, capacities to 45 Mbytes, and transfer rates to 6.0 Mbytes per second, it's the perfect solution to your paging problems.

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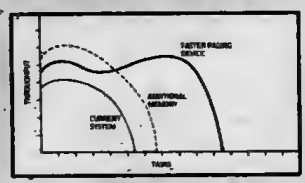
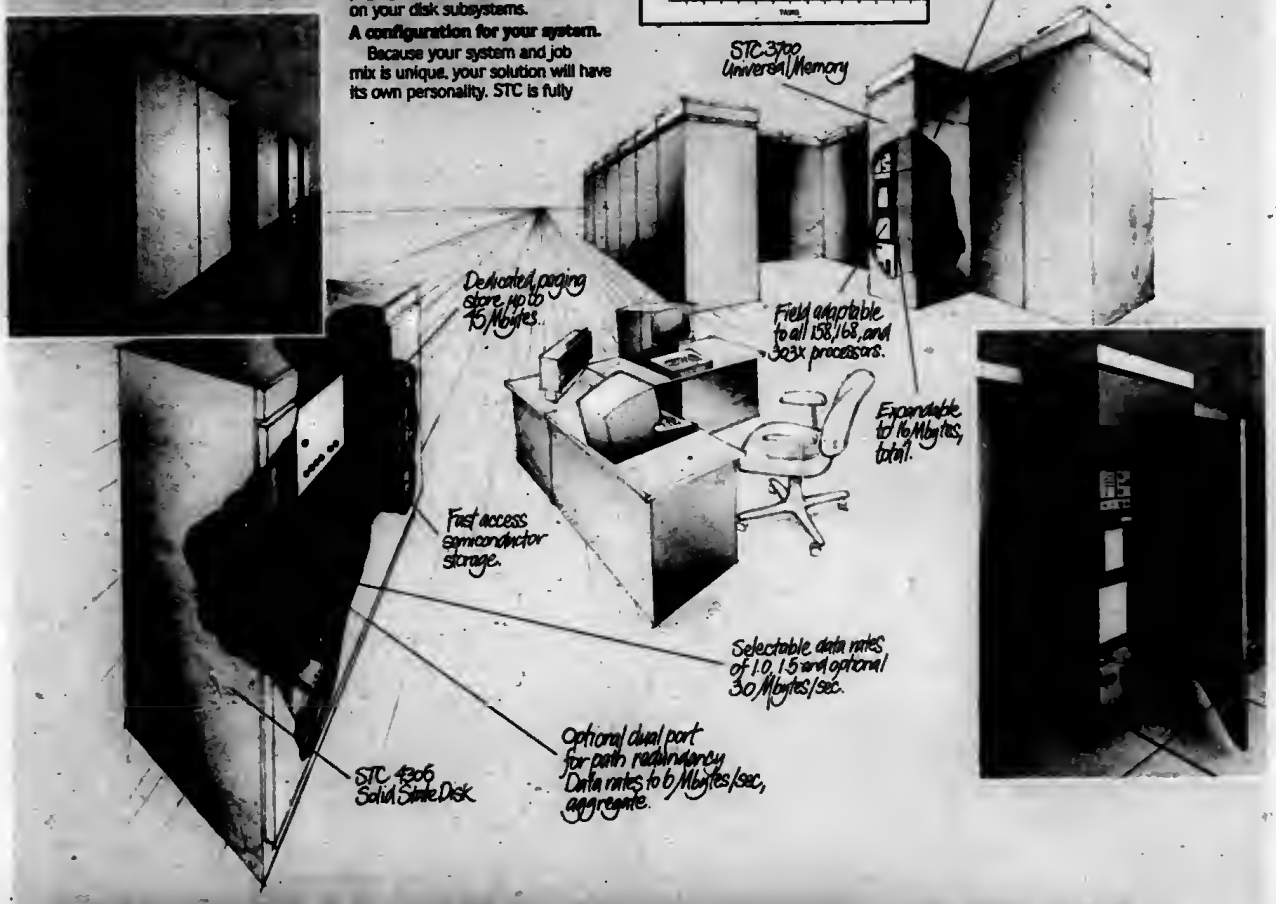
For details, call your local STC sales office. Or write: Storage Technology Corporation, Mail Drop 3M, 2270 S. 88th Street, Louisville, CO 80027. Phone (303) 673-5151.





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Audit, Control, Security Courses Slated

FRAMINGHAM, Mass. — A series of computer audit, control and security courses for DP auditors and quality assurance personnel are being offered in March and May by MIS Associates.

"Auditing IBM's DOS/VS Operating System" will be held in Atlanta March 2-4 and in San Diego May 18-20. The course will teach the fundamentals of DOS/VS and its application in an audit environment.

"Auditing IBM's OS/VS Operating Systems," offered March 2-4 in Atlanta and May 18-20 in San Diego, will present the fundamentals of OS/VS and the tools and techniques available to audit OS.

A Cobol course for auditors covering control considerations, record layouts and methods of detecting program changes will be given March 5-6 in Atlanta and May 21-22 in San Diego.

"Audit and Security Concepts for IBM's MVS Operating Systems," which will introduce security and control considerations for auditing this system will take place March 2-4 in Atlanta and May 18-20 in San Diego.

A follow-up course, "Auditing MVS Workshop," will offer hands-on experience in reviewing MVS integrity. It will be given March 5-6 in Atlanta and May 21-22 in San Diego.

"Auditing and Controls for On-Line Systems — Part I" will be offered March 23-25 in Dallas and May 18-20 in Atlanta. This course will introduce the concepts and technology of data communication systems and deal with the auditor's role in designing and evaluating internal controls.

"Audit and Control Concepts for IMS" will be given March 16-18 in Atlanta and May 18-20 in San Diego to introduce the capabilities and facilities of IMS that impact audit and control objectives.

"Advanced Techniques for Auditing IMS" will describe the techniques available to audit in an IMS environment. Topics such as DB/DC Data Dictionary, access controls, log tapes and controls for restart and recovery will be covered in the seminar, which will be held March 19-20 in Atlanta and May 21-22 in San Diego.

Two-day seminars will cost $350. The three-day course fee is $495. Further information on registration can be obtained by contacting MIS Associates at 12 Juniper Lane, Framingham, Mass. 01701.

Kroell to Head NCC, OAC

ARLINGTON, Va. — The American Federation of Information Processing Societies, Inc. (Afips) has appointed James H. Kroell director of conferences. He will handle the National Computer Conference (NCC), which is scheduled for May 4-7 in Chicago, and the second annual Office Automation Conference (OAC), to be held March 23-25 in Houston.

Kroell was responsible for several conferences and meetings as part of his former position as staff director for professional services at the American Institute of Chemical Engineers.

Information and registration forms for the NCC and OAC may be obtained from Afips, Suite 800, 1815 N. Lynn St., Arlington, Va. 22209.

Call for Papers

ANNUAL SIGSMALL CONFERENCES ON SMALL SYSTEMS, Orlando, Fla., Oct. 19-20

This conference is held in conjunction with Sigmod/Sigmall Workshop on data bases for small systems to be held on Oct. 14-15 at the same location. The theme of the conference will be the impact of small computers on business, industry and society as a whole. Papers on small system applications, architecture, capabilities and system software are requested. Papers on these topics and others should relate to the theme of the conference. However, any paper on small systems will be considered.

Papers should be submitted by April 15 to Program Chairman Dan Lewis, Department of EE/CS, University of Santa Clara, Santa Clara, Calif. 95953.

TRENDS AND APPLICATIONS 1981: ADVANCES IN SOFTWARE TECHNOLOGY, National Bureau of Standards, Gaithersburg, Md., May 28.

The event is cosponsored by the NBS Institute for Computer Sciences and Technology, the Washington, D.C. chapter of the Institute of Electrical and Electronics Engineers (IEEE) Computer Society and the IEEE Washington Section.

The program committee is particularly interested in papers of a tutorial nature and those which present new research in areas including software engineering, software quality control, distributed processing, computer communications, data base software, programming and operating systems, secure software, performance evaluation and novel applications.

Authors of papers should submit three copies of a 1,000 word abstract as soon as possible to Mr. Terry Baker, program chairperson, IBM-FSD, 10215 Fernwood Road, Bethesda, Md. 20014.

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March 23–27, 1981	Miami
April 6–10, 1981	Las Vegas
April 13–17, 1981	New York

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Calendar

The CW Calendar generally appears in the first and second issues of each month, and events are listed a month in advance. All conference announcements should be sent to Calendar, CW Editorial Department, Box 880, Framingham, Mass. 01701, at least six weeks prior to the month in which the event is slated to occur.

March 2-4, Atlanta — **Facilities for Auditing IBM's OS/-VS Operating Systems.** Contact: MIS Associates, 12 Juniper Lane, Framingham, Mass. 01701.

March 2-4, Atlanta — **Auditing & Security Concepts for IBM's MVS Operating System.** Contact: MIS Associates, 12 Juniper Lane, Framingham, Mass. 01701:

March 2-4, Rochester, N.Y. — **A Working Introduction to APL.** Contact: I.P. Sharp Associates, Inc., 1200 First Federal Plaza, Rochester, N.Y. 14614.

March 2-4, Rochester, N.Y. — **APL Fundamentals.** Contact: I.P. Sharp Associates, Inc., 1200 First Federal Plaza, Rochester, N.Y. 14614.

March 2-6, Fort Lauderdale, Fla. — **How to Achieve User Satisfaction in the Delivery of Computer Services.** Contact: Keston Associates, 11317 Old Club Road, Rockville, Md. 20852.

March 2-6, Boston, Mass. — **Systems Analysis Workshop.** Contact: Q.E.D. Information Sciences, Inc., Q.E.D. Plaza, Box 181, Wellesley, Mass. 02181.

March 2-6, Philadelphia — **Structured Data Base Design.** Contact: Improved System Technologies, Inc., ninth floor, 888 Seventh Ave., New York, N.Y. 10106.

March 2-6, Houston — **Structured Systems Analysis and Design.** Contact: Improved System Technologies, Inc., ninth floor, 888 Seventh Ave., New York, N.Y. 10106.

March 3, New York — **Computer-Aided Thinking for the Financial Executive.** Contact: STSC, Inc., 747 Third Ave., New York, N.Y. 10017.

March 3-4, Toronto — **Developing DP's Strategic and Long-Range Plans in the 1980s.** Contact: Management International, Seminar Data Center, Box 5111, FDR Station, New York, N.Y. 10150.

March 3-5, Denver — **Info Trek '81.** Contact: Info Trek 1981, 3940 Holly St., Denver, Colo. 80207.

March 3-6, Boston — **Structured Programming — Techniques for Productivity.** Contact: Q.E.D. Information Sciences, Inc., Q.E.D. Plaza, Box 181, Wellesley, Mass. 02181.

March 4-6, Dallas — **Data Base Fundamentals.** Contact: Q.E.D. Information Sciences, Inc., Q.E.D. Plaza, Box 181, Wellesley, Mass. 02181.

March 4-6, Teaneck, N.J. — **Project Management & Control.** Contact: Q.E.D. Information Sciences, Inc., Q.E.D. Plaza, Box 181, Wellesley, Mass. 02181.

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March 4-6, Toronto — **The Information Age — Evolution or Revolution.** Contact: Audrey Duff, c/o Association for Systems Management, Suite 600, 55 University Ave., Toronto, Ont. M5J 2H7, Canada.

March 5-6, Chicago — **Selecting and Using Office Automation Systems.** Contact: Carol Bell, Management Information Corp., 140 Barclay Center, Cherry Hill, N.J. 08034.

March 5-6, Philadelphia — **User's Role in Systems Development.** Contact: Q.E.D. Information Sciences, Inc., Q.E.D. Plaza, Box 181, Wellesley, Mass. 02181.

March 5-6, Rochester, N.Y. — **APL for Business Applications.** Contact: I.P. Sharp Associates, Inc., 1200 First Federal Plaza, Rochester, N.Y. 14614.

March 6-7, Jersey City, N.J. — **Microcomputers and Education.** Contact: Microcomputer Conference, Catalyst, Jersey City State College, 2039 Kennedy Blvd., Jersey City, N.J. 07305.

March 9-10, Chicago — **Data Communicatons.** Contact: Harvard University, Graduate School of Design, Laboratory for Computer Graphics and Spatial Analysis, Cambridge, Mass. 02138.

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March 9-13, New York — **Structured Systems Analysis and Design.** Contact: Improved System Technologies, Inc., ninth floor, 888 Seventh Ave., New York, N.Y. 10106.

March 9-13, Oakbrook, Ill. — **Structured Data Base Design.** Contact: Improved System Technologies, Inc., ninth floor, 888 Seventh Ave., New York, N.Y. 10106.

March 9-13, Denver — **Systems Analysis Workshop.** Contact: BSI, 4720 Montgomery Lane, Bethesda, Md. 20014.

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'I Just Finished the Program for the Redundancy System. I Just Finished . . .'

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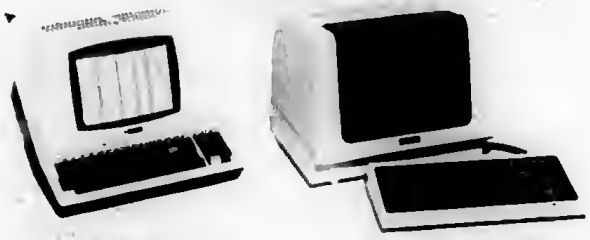

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EDITORIAL

Still Too Scarce

The need for competent professionals in the management information systems (MIS) area is so critical that discrimination against women in any form has long since disappeared — right?

Well, maybe. But that apparently holds true only up to a certain unspecified but very definite organizational level.

"Just look at all of the female programmers in my shop," is the song of the MIS director. "At least half of my technicians are women," the vice-president of DP will proudly state.

And, these are perfectly valid statements. A cursory survey of many installations would probably reveal that close to 50% of the employees in the DP area are women. However, chances are good that the same overview would point out that most of these women are at the lower end of the organizational structure.

Given a large enough number of installations, we might find a respectable number of women with technical supervision responsibilities — the working project leader is a typical example. But just how many women have successfully crossed the chasm between functioning as lower level supervisors to true administrative management in the middle- and upper-level echelons of U.S. corporations?

The invitation list to a recent in-depth seminar for executives from Fortune 500 companies throughout the U.S. provides one interesting answer to this question. Out of some 90 seminar attendees, most of whom carried titles of "vice-president" or "director" within their companies, there were just two women represented. Two out of 90 upper-level executives is a far cry from the even split at much lower organizational levels.

This distribution is an illustration of the current status of women executives in large corporations. Superstar-types are evidently making their presence felt at the highest industry levels, but the female graduate in computer science or MIS who is just starting on her career path should be aware of two things: There is a clear dividing line between technical specialists and corporate managers within American industry, and very few women have stepped over to the management side of that line.

What are the prerequisites for a move into the management arena? In a three-part miniseries, *Computerworld* will publish profiles of female executives who have taken the big step with much success.

At a time when the DP industry is constantly searching for more and better managers, it is totally unrealistic to ignore the female resource. But while the times are definitely changing, they are changing very slowly in an otherwise fast-paced field.

DATA PAST

Five Years Ago
Feb. 2, 1976

WALTHAM, Mass. — A majority of users polled in a budget survey by International Data Corp. said they would move forward on projects and upgrades they had postponed in 1975. Large-scale users planned to increase DP spending by 8% and medium-scale users by about 13%, the survey found.

— — —

TRUMBULL, Conn. — Bunker-Ramo Corp. discontinued its point-of-sale (POS) operations, a move that would affect some 300 full-store operations including Star Markets, Stop & Shop and Shoprite supermarkets. The retarded development of the market for the terminals had increased the anticipated startup costs; Bunker-Ramo's operating losses approximated $4 million in 1975.

Ten Years Ago
Feb. 3, 1971

WASHINGTON, D.C. — The Federal Communications Commission (FCC) removed the last existing roadblock preventing Microwave Communications, Inc. (MCI) from offering data services to users between Chicago and St. Louis. The FCC approved 11 microwave stations which MCI would use to provide point-to-point service to computer and other data users. AT&T appealed the MCI authorization in federal court.

'Hold 'er, Algernon — I just turned up a leetle feller hereabouts . . .'

LETTERS

Alternative to Unions

In "A Case for Unionization" [CW, Jan. 12], Henry J. Noble stated: "Unionizing provides job protection from summary firings, from harassment and from being jumped over for promotion. It provides the means for upward mobility and fair compensation. It provides the means for dignity and respect on the job and the room to do a good job in a 'professional' manner without being exploited unreasonably."

I'd like to suggest an alternative for "unionizing." It's called performance.

Ulo Reivik

Hartford, Conn.

Underestimated by 126%?

I enjoyed reading the front-page article about the deficiencies of RMF [CW, Jan. 19], but I must take issue with two points.

First (and this is currently a very common mistake in the media), one cannot possibly underestimate anything by 126%. If there are 100 units of something and I underestimate that quantity by 126%, then I am saying there are -26 units of that something. Please be advised that 100% less of any measurement or thing is 0.

TSO sessions cannot use a negative amount of CPU time. Or was the article claiming that RMF really did report a negative amount? This reminds me of Isaac Asimov's tale of a chemical experiment in which the reaction occurred a certain number of seconds before the two chemicals were mixed.

Second, in the antepenultimate paragraph, the article mentioned "transfer rates greater than 3.5 msec." Please be advised that 3.5 msec is not a rate, but an amount. Besides this error, the device's data transfer rate [number of bytes per second transferred across the channel] is irrelevant. What is relevant, as was pointed out in the subsequent paragraph, and as David Lindsay pointed out in his study (which I have read), is that the entire I/O operation completes in less than 3.5 msec.

On the whole, I agree with the article's implied caveat, especially when the vendor is itself supplying the measurement tool.

William R. Fairchild

Arlington, Va.

Don't Forget APL

I am continually surprised at how little mention I see of APL (the evolute of Iverson's "A Programming Language") in *Computerworld*.

I expected surely to see its growing importance noted in the Forecast '81 issue [CW, Dec. 29-Jan. 5]. However, I found no mention of it even in the discussion of alternative languages in William Zachmann's excellent "Six Technologies" article. Zachmann predicted "that truly extensible languages which are hierarchically composable and functional in architecture will eventually prevail both for commercial and scientific applications."

APL has these attributes and is already here. It is certainly the major nontraditional language in use today; it is the primary language for new systems development at Xerox Corp. and, I understand, internally at IBM.

Although APL is by no means complete, it is by far the richest programming language. Indeed, many are put off by seeing its keyboard of foreign symbols, each a concept to be mastered. [In partial compensation, APL is starting to be taught in a few grade schools.] However, the difficulty of learning it is amply compensated. The claims of increased productivity using APL are substantiated by the higher salaries offered for APL programmers in ads in CW itself.

Any comments?

Bob Armstrong

Rochester, N.Y.

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SOFTLINE/Werner L. Frank

Is Software Becoming Firmer?

Some visionaries hold for a forthcoming substantial breakthrough in software technology through the widespread use of chip technology. These visionaries are hopeful that software committed to hardwire or firmware will provide better implementation productivity and user economies.

And there is a school of thought that doesn't quite understand what these benefits are really all about. I confess that I belong to this latter group.

The idea of hardening up the software process is not new. I believe Asher Opler first coined the term "firmware" in the '60s to suggest the then-coming significant change in software production and its form of execution. The concept was to be able to construct software at one level lower than what the standard machine code would allow, in order to achieve the following benefits:

(1) Specialized operations, custom-designed to maximize performance in a specified environment for certain functions.

(2) The ability to simulate the instruction or execution repertoire of one machine environment on a second, object machine.

(3) The ability to produce a dedicated machine that optimally performs a specific application or function.

(4) Protection to systems and application developers in "locking up" access to the software.

These concepts have led to variations on the theme ranging from completely operating microprogrammed machines such as the 1968 RW530 computer produced by the then Ramo Wooldridge Division of TRW, Inc. to the more common approach adopted by IBM through the control program technique utilized in its standard line of computers.

More recently the concept of hardwiring has been exploited in the microcomputer by committing certain functions to a read-only memory (ROM) for execution. Even entire applications have been burned onto a chip.

Semantic Problem

There is, of course, a semantic problem in the apparent interchanging usage of the terms "firmware," "hardwired" and "burned" programs. Unfortunately, these words mix methods of implementation with functionality.

We can have the notion of "locked-up" software which is not accessible to the application programmer nor end user. Such software need not necessarily be hardwired, nor does it have to be microprogrammed.

We can have hardwired software which by its very nature is locked up — but it could well be executing standard machine code. "Hardwire" here is meant to convey ROM-based software and not conventional software executing "hardwired instructions."

Finally, we could have microprogrammed software in any one or more states, locked up, hardwired or operating in a conventionally accessible memory.

And firmware could designate any one of these implementation modes, although the term should be limited to convey "a microprogram stored in control memory unit."

How About Productivity?

But what has all of this to do with increased software productivity, production and operation?

The proponents of hardwired software seem to believe that the following benefits can be achieved from this technology:

1. Faster production.
2. Cheaper distribution.
3. More efficient performance.
4. Better safeguarding.

One observer has stated that the current cost of conventional programming, pegged at $10 per line of code, can be reduced in 1990 to 5 cents a line by adopting the process of "putting software on silicon chips."

Typically it is the hardware-oriented person or organization that believes in the economic potential of hardened software. Statements such as the following have been quoted in trade journals in recent years:

"The semiconductor makers . . . will . . . solve the software price barrier by embedding software into firmware."

"[We expect] to circumvent a predicted shortage of programmers by offering plug-in logic modules in lieu of custom-designed software."

"The decade of the '80s will see the software package largely replaced in the marketplace by the firmware package."

"Future small computers will trim software costs, since custom software will be built into the computer as firmware."

It should come as no surprise that the semiconductor firms advocate such a direction, since it serves their direct interests. But do they understand the intricacies of software?

(Continued on Page 46)

READER COMMENTARY/Joey Robichaux

Maybe It's Time for 'Maybebol'

ENTROPY: The amount by which a system differs from its ideal state.

The Second Law of Thermodynamics can be interpreted as saying "Entropy always increases with time." This means that as soon as a perfect system is achieved, it starts to deteriorate. This may be understandable in mechanical systems where moving parts are subject to wear and tear. But what is not so evident is that the concept of entropy applies to logical, or software, systems also.

It is no secret that 60% to 80% of every programming dollar is spent on combatting entropy — that is, maintaining existing systems. If you are involved with any commercial systems, think of how often programmers have to code changes upon changes to that "ideal" system. Why is this always the case? Is there any way to get around this problem?

Let's examine the situation. Many times the people requesting a new computer system (the users) cannot define their needs precisely. Often, they are not sure what they want or how to deal with certain situations. Many ambiguous features are left in systems with the idea, "We'll deal with that problem when we get to it."

Programs and programming languages require exact and unambiguous definitions to function effectively; solving an unknown or ambiguous problem is next to impossible with today's programming languages.

As I see it, there are two possible solutions to this problem.

Solution #1: Carefully and objectively resolve the system design to achieve an exact problem definition.

Response: Who are you kidding? Face it, people have been trying to do this since day one and no one has succeeded yet. Every time they get close, entropy sets in.

This leaves us with the second solution:

Solution #2: Change the programming language.

Why not? We're trying to use rigidly defined programming languages structured along exact lines to provide predictable and consistent results. This obviously does not reflect real-life applications at all. To handle modern complex situations, a more flexible language is needed — a language with the ability to procrastinate and deliver the silicon equivalent of a shrug.

After much research, deep thought and trial and error, I have come up with the outline of an innovative programming language which I call the Multiply Analytic Yet Basically Evasive Bull____-Oriented Language, or Maybebol. The following are some of Maybebol's more attractive features.

IF ... THEN ... MAYBE. An eloquent concrete admission of indecision, this statement is the heart and soul of Maybebol.

DO SOMETHING. When those unforeseen situations occur, the user is on sabbatical in Africa and the project is due tomorrow, the DO SOMETHING statement just might help you hit that deadline. Example: IF ADD-CHG-DEL-CODE = "PIZZA" THEN DO SOMETHING.

Ideally, no one should have any idea just what might be done. (Some more adventurous souls may wish to set up a pool and bet on the outcome.)

GO SOMEWHERE. Where? I don't know, do you?

We're trying to use rigidly defined programming languages structured along exact lines to provide predictable and consistent results. This obviously does not reflect real-life applications at all. A more flexible language is needed — a language with the ability to procrastinate and deliver the silicon equivalent of a shrug.

ON ERROR conditions. The ON ERROR statement would have two possible formats:

1) ON ERROR GENERATE EXCUSE. Everyone knows excuses are more important than results.

2) ON ERROR FORGET ABOUT IT. Self-explanatory.

In each of the ON ERROR conditions, control will be returned to the main program by means of the GO SOMEWHERE statement.

GENERATE X REPORTS. X is an integer from 1 to 32.

Users always demand reports. They take these reports and place them carefully in multicolored binders. These binders are then stacked on the shelf, giving the users a place to store their dust collections. Since no one ever looks at these reports, a great deal of time and effort can be saved by generating them randomly.

COIN. A built-in subroutine. COIN will return a character value of "HEADS" or "TAILS." This can be very useful when making decisions.

GUESS. The programmer doesn't know what to do, the user doesn't know what to do, nobody knows what to do, so why not?

PRETEND. As in "IF BAD-DATA THEN PRETEND."

SEARCH table-name. The SEARCH statement will consecutively search a table in memory. Note that it is illegal to supply what to search for. If somehow a match is found, set the ERROR condition (see ON ERROR).

LOOP FOREVER. A great time saver for the programmer. Instead of having to subconsciously invent subtle and hard-to-find infinite loops, he may now declare them explicitly.

DIVIDE x BY ZERO. Same concept as LOOP FOREVER.

The above statement and philosophy will be the basis for Maybebol. As time permits, I will attempt to complete the language design. This task should be much easier to accomplish than it may appear. You see, just the bare-bones version of Maybebol provides an excellent medium for the computer-aided design of the rest of the language. Just think of all the delightful treasures of illogic waiting to be discovered!

Now, if I can just get this machine out of this LOOP FOREVER statement . . .

Robichaux is a computer analyst for Louisiana State University in Baton Rouge.

LETTERS

Not Real News

Perhaps the cold weather you've been having back East has made it difficult for *Computerworld* reporters to go out and scrounge up some real news. Otherwise you wouldn't have had to run "Kickbacks, Gifts, Sex For Jobs" on the front page of the Jan. 12 issue.

Certainly the things written about have occurred; there will be unprincipled actions in any endeavor that involves human beings. But a laundry list of unethical practices isn't a front-page story. Giving it house-room under your roof, especially the way CW treated it, lends it an importance that just isn't there. And the image of the recruitment industry isn't the only one besmirched — the image of CW likewise suffers.

I would venture to say that if CW really wants to sensationalize its editorial content, it ought to run a laundry list of the nasty things that go on in the more time-honored professions with longer track records — the legal profession, for example. They've been refining their shenanigans for centuries. I dare say there's nothing an employment agency has perpetrated that hasn't been outdone in its scurrilousness a dozen times over by members of the law fraternity. And then there's medicine and of course publishing . . .

Hal Lawrence
President

Hal Lawrence, Inc.
Portola Valley, Calif.

Demeaning to Industry

"Kick-backs, Gifts, Sex For Jobs" [CW, Jan. 12] is quite bias (sic) and demeaning to our industry and I feel this is in fact misrepresenting (sic) of our industries (sic) professionalism.

It seems that the information deals on "hear say" (sic) and not facts. May I remind you that people do have a tendency to distort and twist things around to fit their own desires. Additionally, companies themselves have greater problems by their own representatives in (sic) misrepresenting jobs and opportunity.

While we are certainly aware that some agencies do, in fact, cause problems similar to those of many other in-

Is Software Becoming Firmer?

(Continued from Page 45)

And that's really what it is all about. To commit a procedure to firmware or hardwire implies complete *a priori* understanding and definition of that process or function. That is to say, the entire solution must be carefully worked out in no less detail, nor less care, than if the end product remained as conventional software.

But that's only the start. Having developed the design, and even implemented the logic, the next step is the checkout. Now how many computer programs developed over the years have successfully passed the checkout process and not ended up in the field with an undetermined number of undetected errors or defects?

The process of developing a hardwire solution is no different than the convetional programming process itself — but with the subsequent downside risk of requiring retrofit hardware maintenance — aside from the ongoing enhancements that most software systems demand. What remedy will the supplier of hardwire software provide in the case of a single detected error? How will this supplier deal with the continuing need for improvement and extension?

Sitting Duck

And then there is the hardwire manufacturer's dilemma of becoming a fixed target, or sitting duck, for the more flexible software innovator. Thus Radio Shack, given its ROM-based Basic Level II system for the TRS-80 Model I, is challenged by the random-access memory (RAM)-oriented offering of Microsoft Consumer Products, Inc. in the form of a Level III Basic compiler for that same machine.

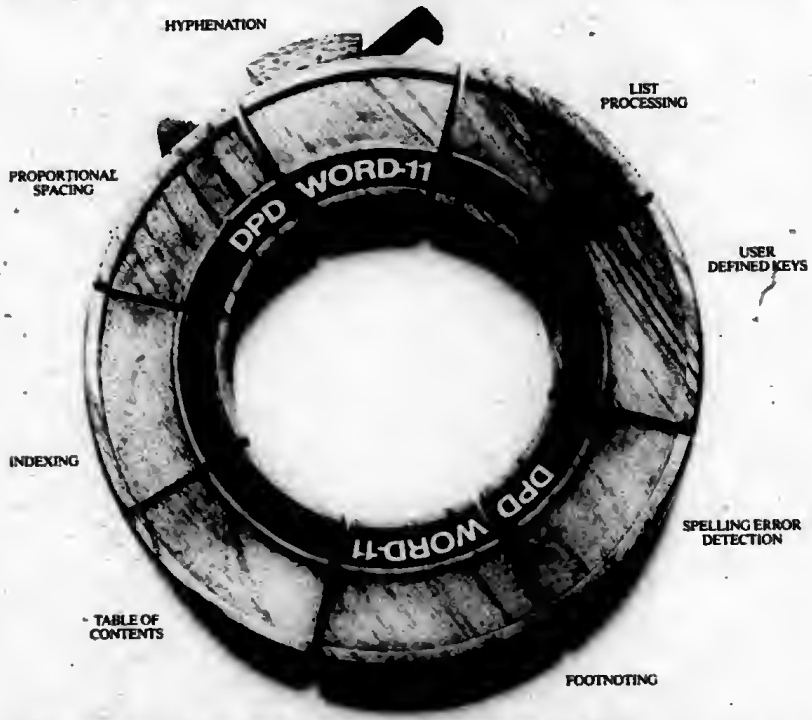
Some other arguments are made in support of fixed programs on chips or ROM. One such position is put forth by Texas Instruments, Inc. in defense of its solid-state ROM integrated circuit chips. The company claims that this is a less expensive way of making programs available than requiring a one-time, larger RAM.

A directly opposite argument, however, is put forth by Radio Shack in support of RAM over ROM for the TRS-80 Model II. Radio Shack states that RAM will allow maximum utilization of the available memory instead of possibly losing resources that may be idly sitting by in the ROM.

But lest we be deemed overly partisan on the issue of software, we also note another hardware manufacturer's view. Amdahl Corp. has consistently avoided micro programming as a means of achieving enhanced performance. Rather, Amdahl has put all of its efforts and resources into building an overall higher performing CPU.

We can expect to find this flip-flop of design decisions over the next years, since no one seems to really understand the full significance of the economics of hardwiring the software. At the moment, the hardwire approach to developing and executing computer programs is really a hardware advance and not a software productivity solution.

The Whole Truth About PDP-11 Word Processing.



When you explore word processing systems, you'll find a number of systems that offer part of the package. And frankly, if you're only looking for text editing, almost any system will do.

But if you're looking for full word processing capabilities, you should insist on a system that can handle all of the tough tasks you'll encounter.

For starters, a good system will have list processing, the vital function that generates correspondence, reports, even statistical analyses. It should have user defined keys to simplify repetitive operations.

And a good system can handle the details. Like spelling error detection, automatic renumbering of footnotes, tables of contents and indexes. And proportional spacing and hyphenation for professional looking documents.

A good system can be shared. It should be able to support up to fifty terminals. And it must be backed up by successful installations and a strong service team.

After you've examined the options, we think you'll select WORD-11, the only system with all the sophisticated features you could want.

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Data Processing Design, Inc.

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LETTERS

dustries, our trade associations and networks are constantly monitoring this type of activity.

I would trust that your paper would refrain from publishing such bias (sic) information without facts in the future. Additionally, please give equal consideration for the many ethical recruiters who do the job day in and day out who patronize your paper and thus provide a useful service to the EDP community.

Louis A. Leimone
President
EDP Recruiter
VIP Personnel Consultants, Inc.
Durham, N.C.

Growing Your Own

After reading "Grow Your Own Programmers . . ." [CW, Dec. 1], I wanted to share some similar experiences (and some different conclusions) relating to the Colonial Penn Insurance Co. in Philadelphia.

Colonial Penn hired Jerome Garfunkel Associates, Inc. to design and teach six "ground-level" training programs over the past 2-1/2 years. In total, approximately 95 application/systems programmers will have been "created" for Colonial Penn.

The decision to design an entry-level programmer training class and "grow" programmers from other areas of the company was not without risk. There was a substantial investment (both money and time), and there were no guarantees that the new programmers would be productive in a reasonable amount of time after leaving the class.

The gamble was very successful. After the success of the first class, we fine-tuned each succeeding class to ensure even better results.

Each iteration of the programmer training class (which contained 15 to 20 students) attracted a flood of 300 to 500 interested applicants from other areas of the company. An innovative screening method was developed using logic games, which turned out to be a very reliable indicator of a candidate's problem-solving ability. These logic games are still used quite successfully in a very structured environment to develop problem-solving (deductive) skills.

Students generally came from two sources within the company. Some came from operations and production control jobs, while others came from the client community. In all cases, we tried to capitalize on their backgrounds when it was time to make "permanent" job assignments.

The current programmer training class is 13 weeks long. (This has varied from class to class.) After the seventh week, the students report for two weeks of on-the-job training in the areas to which they will eventually be assigned. The assignment during the two-week on-the-job portion are carefully designed to reinforce the training up to that point.

Following this, they return to the classroom for four more weeks before graduating to their permanent positions.

The last four weeks primarily reinforce maintenance programming techniques and good structured style.

These programmers learn the latest Cobol as well as Cobol 68/74/81 differences. (Our company is a member of the Codasyl Cobol Committee and sensitive to the current directions in structured Cobol programming techniques.)

JCL and time-sharing on the company's host machine are important parts of the curriculum. Starting programmers learn correct habits and style from the beginning. This becomes even more beneficial as they become senior programmers.

The course is nearly 100% workshop-oriented. The friendships and synergy created as a by-product of the training are beautiful to watch develop and are very beneficial for the company.

Upon graduating, in most cases, students are given maintenance programming assignments.

The programmer training class has been extremely successful. The loyalties developed from the career opportunity given to these select students should not be underestimated. In fact, we are considering follow-up training to "fast-track" some of these students into management positions as well as advanced-level application and system programming.

Jerome Garfunkel
President
Jerome Garfunkel Associates, Inc.
Great Neck, N.Y.

CICS User Not Confined

The product spotlight article dealing with data communications monitors [CW, Dec. 15] included one misleading implication that should not be overlooked.

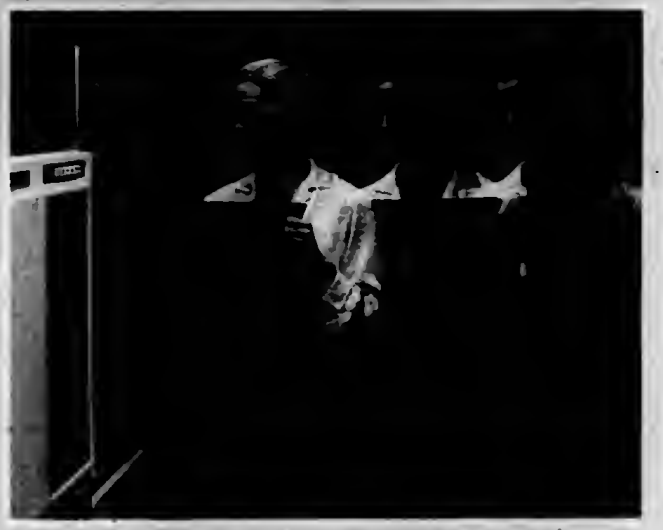
It is true that IBM's CICS comes with IBM-supplied interfaces only to IBM's IMS data base management system (DBMS) packages; but interfaces to many other DBMS packages, including Adabas, IDMS, Model 204, System 2000 and others, are supported by the vendors of those packages and are in widespread use. The CICS user is not confined to IMS, even if IBM would like him to think he is.

Albert C. Lowenstein
Austin, Texas

Computerworld welcomes comments from its readers. Preference will be given to typed, double-spaced letters of 150 words or less. Letters should be addressed to Editor, *Computerworld*, Box 880, Framingham, Mass. 01701.

BTI 8000 32-bit multiprocessor system

Now you can grow by plugging in resources instead of changing computers



Finally, there's a computer system that lets you grow by plugging in resources, instead of by changing models – the BTI 8000.

The secret is Variable Resource Architecture (VRA): a flexible mix of hardware resources controlled by a single, self-regulating operating system.

Hardware resources consist of multiple processors, memories, and input-output channels operating in parallel without the complex internal networking normally associated with such arrangements. The result is mainframe performance at substantially lower costs, plus unequalled flexibility.

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Furthermore, you can vary processing capability over a *tenfold range* by merely adding or deleting hardware modules. Differences in configuration are invisible to user software, and no reprogramming or recompilation is required.

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- Fail soft architecture.
- Secure multi-user operations.
- Demand-paged virtual memory.
- Simultaneous use of ANS COBOL 74, ANS FORTRAN 77, PASCAL/8000, and BASIC/8000.

As for reliability and support, they're established BTI traditions, proven by over 2,500 other BTI computers operating in the U.S., Canada and Europe. For full details about the BTI 8000, contact the BTI office nearest you.

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TI Announces E
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Introducing the new DS990 Models 7, 9 & 29 with fixed and removable disk storage.

If you're looking for ways to get more out of your computer systems, Texas Instruments has got some great things in store for you. Introducing the new members of our DS990 family—the DS990 Models 7, 9 and 29. Powerful computer systems that put the bite on disk storage costs.

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Flexibility is not forgotten at TI. That's why each of these new DS990 computer systems feature disk storage systems with both fixed storage and a removable cartridge. Fixed disk storage allows easy access to day-to-day information, while removable cartridge disks let users change information when needed. The removable cartridge disk also provides users with a safe, easy, and inexpensive way to back-up information without purchasing another disk drive or magnetic tape drive.

Both the DS990 Models 7 and 9 combine these disks with the power and field-proven reliability of TI's 990/10 CPU. The DS990 Model 7 provides 16 fixed and 16 removable megabytes of disk storage. For greater storage capacity, the DS990 Model 9 includes a disk drive with 96 megabytes of storage — 16 removable and 80 fixed. Should you need it, a second identical disk can be added to either system on the same controller for additional storage.

The DS990 Model 29 features a new, low-profile, 60-inch cabinet and offers the processing power of TI's 990/12 CPU — the strongest central processing unit ever developed for a DS990 computer system. With one disk drive, the Model 29 provides 96 megabytes of storage — 16 removable and 80 fixed. And you can double your capacity by adding a second drive on the same controller.

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The DS990 Models 7, 9 and 29 fit right into the DS990 computer family. So you can upgrade your system at any time with a minimum of cost and effort, they're upward-compatible with the other members of the DS990 family— from the microcomputer-based Model 1 to the highly-advanced Model 30.

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xtra Storage for
g Family.

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For more information about our new DS990 Models 7, 9 and 29, contact the TI sales office nearest you, or write Texas Instruments Incorporated, P.O. Box 1444, M/S 7884, Houston, Texas 77001. In Europe, write Texas Instruments Incorporated, M/S 74, B.P. 5, Villenueve-Loubet, 06270, France. In Asia Pacific, write Texas Instruments Asia Ltd., 990 Bendeemer Road, Singapore, 1233.

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HUMAN CONNECTION/Jack Stone

Top Managers Must Find, Use Communicators

The subject of "success" of the larger data processing urganizations has always been interesting to me for a number of reasons.

First, there continue to be wide differences of opinions and perceptions between users and DPers as to the quality and quantity of the DP product.

Second, there doesn't seem to be a whole heckuva lot going on to close these gaps in understanding. I sense that a great many users have resigned themselves to living with DP departments which, they feel, will forever be churning out systems of dubious value on delayed schedules with increased budgets. Hence, the users rush madly to acquire their own micros or minis and tie them to the large mainframe, but only when they need that final burst of DP power.

Third, there are a few noble DP managers who try very hard to improve their departmental philosophies and operations but wind up being labeled as "troublemakers" or "radicals" and ignored, duwngraded or, in the case of one reader, even removed. Here's what he wrote:

"I have been following your articles on what DPers respect in a manager. I agree with you and your findings. Huwever, upper management does not always agree; in fact, sometimes they find it necessary to terminate an employee who strives for these very goals.

"This is exactly what happened to me.

"I was employed (as a manager) by a large and very profitable data processing organization in Washington, D.C. Corporate officers were located several hundred miles away and had very little knowledge of the inner workings of my center . . .

"Through my sincere efforts in fairness, training, evaluation and promotion of my immediate employees, I strived for the very same factors you have mentioned. For example, I was able to transfer to other departments many employees who were trained in quality work, desired to produce timely work and were client-oriented. I established a career ladder for my employees who were well-compensated for their work and desires.

"And what was my reward? I was terminated! However, I attribute this not to my employees nor the executive committee, but rather one individual in authority who really 'had it in for me.'

"I sincerely believe that it is not what you know or what you professionally contribute (that makes one successful). Instead, it's what someone else *feels* about you and your efforts.

"You see, it's not the way a manager treats his employees, but who else likes the manager (that determines his success)."

No Mystery

There is no mystery as to why these unfortunate situations develop. Simply stated, personalities come into conflict over one issue or another and, through stubbornness or egotism or downright bias, the individuals involved will not or cannot sit together in a mature, unemotional way to discuss and resolve their differing opinions.

And there is no magic as to how to get over the communications problems. Simply stated, DP management must seek out and put into sensitive interface slots those people who *can* deal easily with particular populations. This means being able to listen and respond with sensitivity, to raise disagreeable issues in a diplomatic manner, to doggedly pursue resolution of these issues and to anticipate the needs of these populations.

For those managers concerned about their longevity, I make this suggestion: get communicators in or prepare to get out.

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Enhancement To 'Ramis II' Aids Decisions

PRINCETON, N.J. — Mathematica Products Group (MPG) has announced a release to its Ramis II data base management system (DBMS) that is said to allow statement errors to be corrected easily and to enhance the evolutionary process of developing a request.

The Interactive Request Modification capability of Release 2.0.03 is expected to be valuable in decision support applications, a company spokesman said.

When a statement error is detected, entry into the request correction process occurs automatically. An error message is displayed along with any word the error may be associated with.

The release is free to Ramis II users. For users of Model 50 or smaller in the IBM 360 series, Model 148 or smaller in the 370 series and model 4331, Ramis II costs $22,000. For users of Model 65 and larger in the 360 series, Model 155 and larger in the 370 series, Model 4341 and larger in the 4300 series and all models in the 30 series, Ramis II costs $43,000.

MPG can be reached at P.O. Box 2392, 12 Roszel Road, Princeton, N.J. 08540.

'Software Helper' Self-Documented At Low Line Cost

BOULDER, Colo. — Software claimed to produce "structured, compatible file-handling programs which are self-documented" at a cost of less than .01 cent per line of code is available from Eccsys Corp.

"A guest programmer using Software Helper developed 487 lines of code in 15 minutes," according to the company.

Software Helper costs $750. Eccsys, formerly known as Front Range Computing, is at Suite D, 934 Pearl, Box 2135, Boulder, Colo 80306.

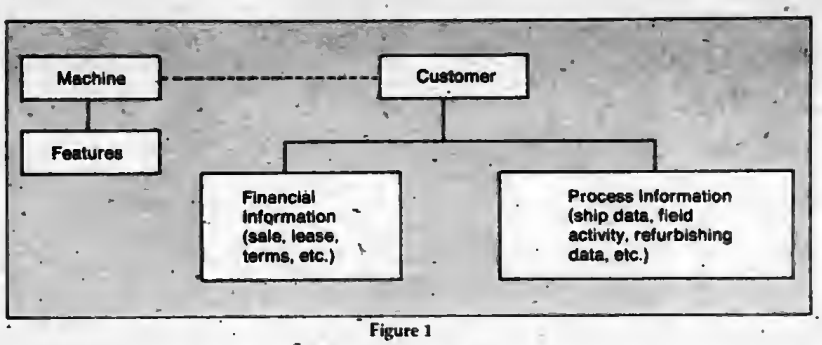

Figure 1

DBMS Bought for Memorex vs. IBM Still Working Hard, Expanding Use

SANTA CLARA, Calif. — The dust stirred by Memorex Corp.'s antitrust suit against IBM may have settled, but a data base management system (DBMS) installed to provide support during the litigation is still working hard, according to Betsy Decker, a Memorex systems programmer.

When Intel Corp.'s System 2000/80 came up on the firm's Amdahl Corp. 470V/6 mainframe in 1975, it was totally dedicated to Memorex's antitrust litigation. Due to the amount of background research required, the firm hired people "who had never even seen a CRT" and trained them in antitrust law and how to make the best use of the DBMS while filling them in on company histories of both Memorex and IBM, a spokesman explained.

The activity was aimed at supporting the discovery process for this lawsuit. Teams of clerical personnel were hired to read documents, determine which elements were important to the case, code and enter this information to the data base and then use System 2000/80's English-like query capability to access the data, Decker said. Employees without any DP experience were able to work with the system after three days of classroom instruction and one group of lawyers, who were familiar with computers, finished the training course in one day, according to Decker.

Other Memorex attorneys were totally unfamiliar with DP terminology and constraints and found it difficult to accurately define their needs. This made it essential to bring up a prototype system for the lawyers to work with as soon as possible, Memorex said.

Thus, prototyping capability was among selection criteria that included data base security, ad hoc query capability, flexibility and satisfactory response time when DBMS evaluation took place. System 2000/80 was chosen from several competing products — Cincom Systems, Inc.'s Total, Software AG of North America, Inc.'s Adabas and IBM's own IMS-based on these criteria, according to a Memorex spokesman.

Although the suit was decided in IBM's favor in 1978 [CW, July 17, 1978], the portion of the data base containing information pertinent to the litigation is still available for the drawn-out appeals process, she said.

Other Applications

While the judiciary moves at its own slow pace, the DBMS has been put to work on other systems.

One application, the field assets tracking system (Fats) was developed to track Memorex disk drive sales. The staff began working on Fats in 1976 and it was implemented in March, 1980 after more than three years in development, Decker said.

Fats physically tied together three separate Isam files that include data on the customer, product features and the hardware in a merged configuration (see Figure 1).

The application now tracks all

(Continued on Page 52)

Got Any Workhorses?

Report writers. Sorts. Library management software.

These are among the workhorse utility packages that make life easier for the programmer — if things go right.

Computerworld will be reviewing the systems and utility software that is the backbone of many installations in an upcoming special report.

Let us in on your experiences with these packages by March 27.

Send a typed, double-spaced manuscript no longer than five or six pages to Rita Shoor, Senior Editor/Software & Services, *Computerworld*, Box 880, Framingham, Mass. 01701

IBM DOS USERS BUDGET FOR DOSSIER IN '81

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"I am glad I wrote DOSSIER into my budget - it will definitely make 1981 a better year for us."

David Orbaugh, Director of Advanced Systems, Knight Publishing Company, Charlotte, North Carolina

All it took was a free trial to convince David Orbaugh that he needed DOSSIER. "My programmers are most enthusiastic," says Orbaugh. "Once they saw the DOSSIER trial, it was impossible to get it away from them - I had to buy it!"

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CCI

Memorex DBMS Still Going Hard, Expanding Use

(Continued from Page 51)

products marketed by Memorex and handles monthly billings, depreciations and sales reports. Heavily usd by numerous departments "it's rare not to see a Fats inquiry when checking system status," according to Greg Michaelson, information systems department supervisor. "Departments are always wanting to know what is being shipped to whom and on what date."

Prior to Fats implementation, the firm had conducted another DBMS evaluation because one Memorex contingent felt that System 2000/80's strengths were tied to on-line areas. Plans for the application did not include bringing it on-line, a spokesman explained.

However, based upon ease of use, thorough documentation, security requirements and the firm's assessment of the DBMS as a programmer's tool, Intel's software was selected again.

The system contains approximately 1.5 million records with some 359 million data characters and month-end reports total more than one million print lines, the firm said.

The DBMS is also utilized for a market forecasting application that was reportedly prototyped by Roger Holen, marketing manager for software products, "without writing a single line of code." He used System 2000/80 strings — a long or complex series of commands that can be invoked with a single command — to prompt computer-naive users of the forecasting system.

With the help of these prompts, they use the DBMS' query facility to get at required data and even now, the only written code in the entire system is a front-editing procedure.

The security-by-entry feature of the DBMS confines access to regional data to personnel within that particular region and authorized home office personnel who generate consolidated reports (see Figure 2 for the forecasting data base structure).

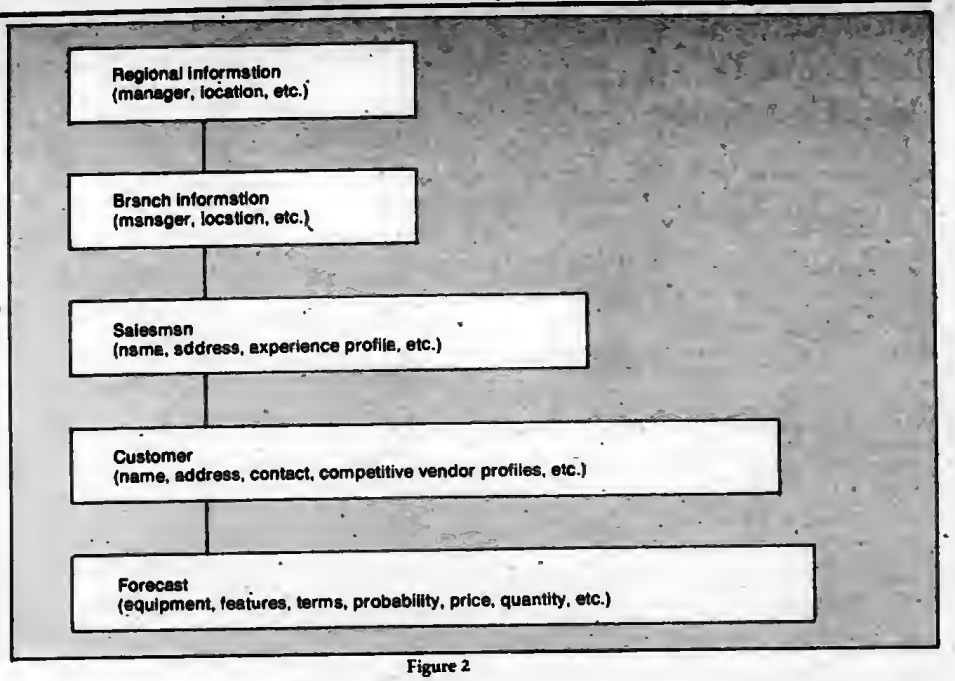

Figure 2

Statistical Tool Runs on PE 32-Bit Minis

ATLANTA — Georgia State University has announced that the Bio-Medical Computer Program (BMDP) statistical software package is now available to users of Perkin-Elmer Corp. 32-bit minicomputers.

BMDP incorporates 34 programs that include statistical and computing procedures, supplementary output for detailed data analysis and graphical displays.

Open-ended control allows user-supplied Fortran code and access to other subroutines for handling editing, transformation, data management and analysis.

Georgia State University Computer Center distributes BMDP for Perkin-Elmer systems through an arrangement with University of California at Los Angeles, which developed the software package.

BMDP costs $1,500. It is available to universities and other nonprofit organizations for $500 and government agencies for $1,000, according to Georgia State University at University Plaza, Atlanta, Ga. 30303.

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The star of this low-cost CRT family is the new microprocessor-driven 550S. It's functionally three terminals in one, with distinct operating modes for conversational timesharing, transaction processing, and text manipulation or software development.

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The other new member of our 550 family is the highly reliable 550E. Like the 550B, it's driven by a custom LSI chip and has only 19 integrated circuits, giving you a 42,000 hour MTBF. The 550E features a dedicated keypad for numeric entry and cursor movement.

Perkin-Elmer is a Fortune 500 company with terminal sales offices located in Atlanta, Boston, Chicago, Los Angeles, New York, San Francisco, and throughout Europe. Distributors: Arrow Electronics • Automated Business Computers • Computer Peripherals of New England • Computer Peripheral Technology • Data Terminal Mart • The David Jamison Carlyle Corp. • International Peripheral Systems • PAX Computer Company • Selecterm • The Thorson Company • U.S. Robotics • Westwood Associates.

For more information write: Perkin-Elmer, Marketing Communications, 2 Crescent Place, Oceanport, NJ 07757. **Or call toll free: (800) 631-2154. In NJ, call (201) 870-2412.**

PERKIN-ELMER

Tominy DBMS, 'Query' Fit Series/1 Under EDX

CINCINNATI — Tominy, Inc. has announced the availability of Data Base-Plus, a data base management system, and a Query facility for IBM Series/1 under EDX.

Data Base-Plus offers independent storage of information accessed by issuing a CALL statement from the application program, using Cobol, EDL or assembler, or a request from the screen through the Query facility, a spokesman said.

Query supports arithmetic functions, Boolean operators, derived fields, sort and report writer. Once defined, a query procedure can be saved for subsequent recall, modification and execution.

Both products also run in conjunction with EDX under the Multiple Terminal Manager without any modifications, according to Tominy.

Utilities Set

A complete set of utilities is included for data base definition, backup/-restore, delete/transfer, testing data base calls, data base statistics and security code definitions.

Data Base-Plus carries a one-time fee of $10,000, with $1,500/year for maintenance. Query costs $5,000, with an annual maintenance fee of $750.

Tominy is at 4152 Crossgate Drive, Cincinnati, Ohio 45236.

MVS Users Group Formed in California

UNIVERSAL CITY, Calif. — Whether you're going through a conversion from VS1 to MVS or you're already coping with MVS at your installation — take heart. Others have been there first, and they have organized an MVS User Group (MVSUG) with members who are ready, willing and able to discuss MVS idiosyncracies.

People from approximately 50 installations either currently running or interested in bringing up IBM's MVS operating system meet once each month to exchange information pertaining to their common interests. The MVS user group has combined its meetings with the Los Angeles chapter of the Computer Measurement Group (CMG), according to Sue Kemper, MVSUG/CMG president.

"Our basic thing is not to reinvent the wheel," she said. Meetings include both structured and unstructured discussion of MVS problem areas, performance considerations and a firsthand look at developments in various areas of related technology, she explained.

Discussions among MVSUG/CMG members often help them to avoid problems encountered by others and obtain solutions to glitches that result in costly downtime within their installations, Kemper said.

Although the group has "been around for nearly seven years" on an informal basis, formal meetings with invited speakers are relatively new and have generated calls for help and additional information from all over the U.S., she said.

In addition to the benefits derived from informal discussion, representatives from major hardware and software vendors are often invited to present technical data regarding new products designed for medium- and large-scale DP organizations.

Additional information about MVSUG/CMG is available from Kemper at 100 Universal City Plaza, 502/LL, Universal City, Calif. 91608.

Who will be first to see into the depths of space?

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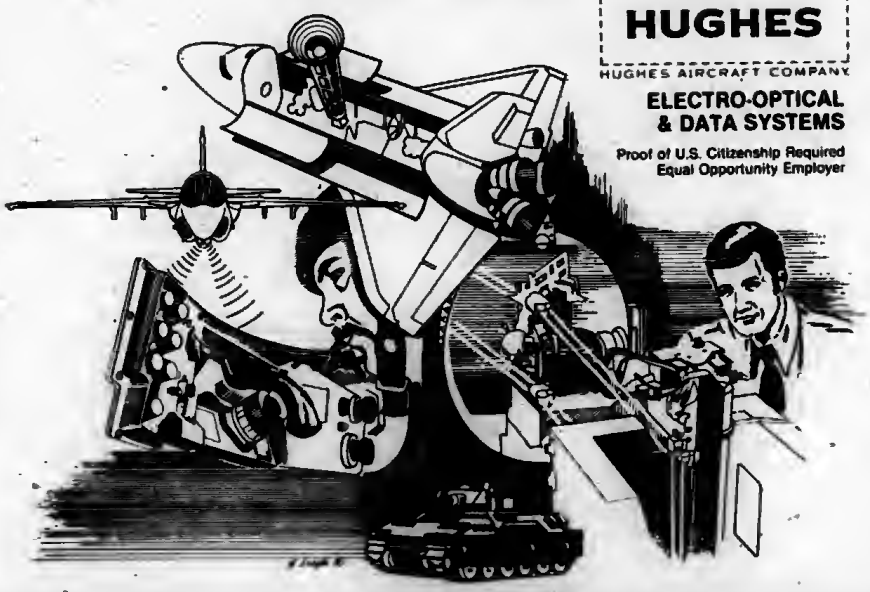

Package Lists System/3 History

DARIEN, Ill. — A package that consists of programs organizing and listing the system history of an IBM System/3 is available from Financial Systems and Services.

The System History Analysis consists of five reports, ranging from a system history to a report on $Spool activity.

The analysis costs $8.50 (for diskette, postage, documentation and handling) from Financial Systems and Services at Suite 214, 805 Plainfield Road, Darien, Ill. 60559.

System/34 Gets Word Processing

ROCKPORT, Mass. — Paratext, a word processing package for the IBM System/34, has been introduced by Para Research, Inc.

Paratext offers immediate access to up to 500,000 pages of documents indexed either on the CRT or in hard copy. It features a full-service text editor, a forms design program and a variety of print programs, according to a spokesman.

Paratext enables every CRT terminal of a System/34 to function as a word processor to create, edit, store and print any sort of document, he added.

Paratext will drive any printer the user can interface with the System/34, according to its vendor. Its print programs print text as stored, insert variable data automatically from a sequential file or present replaceable lines on the CRT for manual insertion. Continuous page numbering is possible.

Paratext costs $500, which includes documentation, source code, a hot-line service and free updates, Para Research said from Whistlestop Mall, Rockport, Massachusetts 01966.

For Burroughs Users

Three Programmer Productivity Tools Bow

GLENDALE, Calif. — Three programmer productivity tools for Burroughs Corp. computer users, designed for maintenance work, development tasks and new language form construction, have been unveiled by Progeni Systems, Inc.

Progeni M, designed as a "plug-in-and-use" package, is said to format existing code into a standardized, easily read form for maintenance work.

Progeni D, also "plug-in," reportedly provides functional building blocks for constructing application programs, language extension and program generation.

Variable Manipulation

Progeni E, recommended for organizations that wish to create their own software tools, makes possible variable manipulation within functions, code selection and positioning facilities, according to a company spokesman.

A free brochure describing the tools — priced between $6,000 and $9,000 for M, $15,000 for D and between $4,000 and $6,000 for E — is available from 715 North Central Ave. Glendale, Calif. 91203.

Workshops Designed to Assist IBM Applications Programmers

MONTPELIER, Vt. — Two-day workshops designed to help applications and systems programmers achieve high performance from data sets using IBM's Virtual Storage Access Method (Vsam) are being offered by Solutions, Inc.

The workshops will be given at the following locations: Boston, March 23-24; New York City, March 30-31; Buffalo, April 13-14; Hartford, April 20-21; and Philadelphia, April 27-28.

The cost for the workshops, including lunches and workshop materials, is $395 for the first student from any company and $325 for each additional student.

A course outline is available from Solutions, Inc., P.O. Box 989, Montpelier, Vt. 05602.

Programmers Offered Courses

NEW YORK — Intensive three-week courses for entry-level programmers working in IBM environments have been scheduled here by Software Education Corp.

"OS/MVS Data Management" will be offered from Feb. 17 through March 6. "Introduction to IBM 370 OS/MVS Systems Programming" will be given March 23 through April 10.

The cost per course is $1,200. Software Education Corp. is on the 37th Floor, Grace Building, 1114 Ave. of the Americas, New York, N.Y. 10036.

Legal Aids Run On System/34

LOUISVILLE, Ky. — Barnett & Alagia Systems Group is offering Time Accounting System (TAS) and Partner Income Distribution System (Pids) software packages for attorneys. Both are designed to run on IBM System/34 computers.

TAS provides data for recording attorneys' and paralegals' time plus accounts receivable. It costs $20,000.

Pids brings the concept of profit centers into law practice. It scales monetary rewards to individuals in direct relation to their contributions according to a predestined formula. It costs $10,000.

Barnett & Alagia is located at 1700 Kentucky Home Life Building, Louisville, Ky. 40202.

'UFO' Price Increases Announced by Oxford

HASBROUCK HEIGHTS, N.J. — Oxford Software Corp. has announced price increases for User Files On-Line (UFO), its application development system for IBM CICS users.

The package now costs $18,000 for DOS and $24,000 for OS, with lease terms available.

Additional information is available from Oxford at 174 Blvd., Hasbrouck Heights, N.J. 07604.

System 2000 Gets Support

NEW YORK — Genasys International, Inc. has enhanced its family of software tools to include optional support for Intel Corp.'s System 2000 data base management system. The firm's software reportedly allows users to access the System 2000 data base without prior knowledge of System 2000 call sequences.

The optional feature is said to support the programmer's specification of segment definitions, access paths and record and segment I/O statements.

A basic Genasys system carries a $70,000 license fee, including either a Cobol or PL/I source code generator. The Specifier option costs an additional $12,500 from the firm at 17 E. 45th St., New York, N.Y. 10017.

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Despite its size and price, the VAX-11/750 is *totally* software compatible with the larger, faster VAX-11/780—the computer that has been setting performance standards ever since its introduction.

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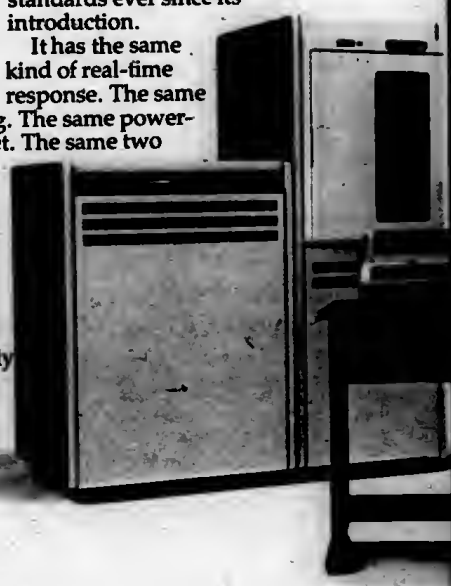

VAX-11/750.

optimizing FORTRAN that is a full ANSI 77 implementation. A high-speed COBOL based on current and anticipated ANSI standards. A PL/I in the same performance class as VAX FORTRAN. Plus highly interactive BASIC, PASCAL, CORAL and BLISS.

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And to make system performance complete, Digital is introducing its own RM80 Winchester disks, the latest in mass storage technology.

Distributed VAX power.

The VAX-11/750, combined with Digital's commitment to network leadership, adds a new dimension to distributed processing.

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State-of-the-art VAX reliability.

The VAX-11/750 is the industry's first 32-bit "minicomputer" designed with custom LSI gate array circuits. This advanced circuitry means fewer components, lower power consumption, easier maintenance, and higher overall reliability.

In fact, the VAX-11/750 is one of the easiest computers to maintain and service that has ever been developed. It can even be diagnosed over telephone lines from Digital's Remote Diagnostic Center in Colorado Springs and from two centers in Europe.

And VAX computers are supported by Digital's worldwide service organization, with more than 14,000 people in over 400 offices.

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'Track 50' Scheduling System Fits Prime V-Mode Computers

ANN ARBOR, Mich. — Track 50, an interactive scheduling system designed for operation on Prime Computer, Inc. V-mode processors, has been introduced by T&B Computing, Inc.

The Basic Scheduling module of Track 50 analyzes the precedence of I-J networks, with 21 standard reports to cover scheduling, resource allocation, budget evaluation and performance.

The modole can study up to 5,000 activities per network, and each project can contain an unlimited number of networks, the vendor said.

The Network Graphics module produces time-scaled network charts or Gantt bar charts with variable sizing and variable scaling from one to 100 day/in. It highlights and imprints information on the chart.

Multilevel Nets

Track 50's Advanced Scheduling module analyzes multilevel networks and split-activity processing. A Resource Leveling module can study up to 10 resources over as many as 50 separate networks. Optional Network Graphics contains special highlighting and bounds/-sights.

The Track 50 Basic Scheduling module can be purchased for $12,000 and leased for $500/mo.

Network Graphics costs $8,000 or can be leased for $335/mo.

The Advanced Scheduling Package, Network Graphics Options and Resource Leveling each can be purchased for $5,000 or leased for $200/mo.

The vendor is located at 3853 Research Park Drive, Ann Arbor, Mich. 48106.

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Execs Get Graphics

BEAVERTON, Ore. — A graphics package designed to translate data into pictures for management personnel has been introduced by Timberline Systems, Inc.

Available in pie-graph form, bar-graph form, a linear graph version or plot-graph annotations form, the Graphics Package is designed for use with Hewlett-Packard Co. HP 7225A, HP 7220B and HP 7220S plotters.

TI Minis

The package is said to run on Texas Instruments, Inc. DS990 minicomputers using the DX10 operating system. The three versions of the package include software, connecting hardware, plotter and documentation.

The HP 7225A version costs $3,995; the HP 7220A version costs $6,495; and the HP 7220S model is priced at $8,495 from the firm at Suite 220, 10550 S.W. Allen Blvd., Beaverton, Ore. 97005.

RT-11 Gets PL/I

CHAPEL HILL, N.C. — A PL/I runtime license for Digital Equipment Corp. PDP-11 computers running under the RT-11 operating system is now available from Applied Information Systems, Inc. (AIS).

PL/I programs can be developed using the AIS-PL/I compiler running under RSTS/E, RSX-11M, RSX-11D, IAS or VAX/VMS and then executed on a system running under RT-11. AIS-PL/I is suited for applications with extensive file processing and nonnumeric data, its vendor claimed.

A single-machine AIS-PL/I runtime license for use with the RT-11 operating system is available for a one-time fee of $1,500, AIS said from Suite 207, 500 Eastowne Drive, Chapel Hill, N.C. 27514.

Olamic Renames, Enhances Transaction Manager

CHICAGO — Olamic Systems Corp. has enhanced its Video Transaction Management System and renamed it Demand 91.

The name change is in line with the company's policy of publishing software products on an "Edition Year" basis, rather than a release numbering system. This policy allows users to take advantage of additional features as they become available throughout the entire calendar year without additional cost, the vendor said.

Demand 91 is a video transaction management system for users of Digital Equipment Corp. Decsystem-10 and 20 interactive transmitters. One enhancement enables Demand 91 to interface with System 1022, a data base management system for Decsystem-10 and 20 users; another allows a series of stored responses to initiate automatic viewing or data management operations.

Another Demand 91 enhancement optimizes data transmission from a host processor by determining if characters already are displayed on a screen and by transmitting only the data that has been changed.

A terminal definition module enables the user site to describe the characteristics of terminals that may not have been supported previously by Demand 91.

Video Options

Demand 91 also has been enhanced to support advanced video options such as field blinking, reverse video, boldface character display and line-drawing graphics. Its new query capabilities enable Demand 91 to search files to find approximate data values using its built-in soundexing capability.

The cost of the Demand 91 system is $9,500 commercially and $6,500 for academic institutions. The cost to time-sharing companies is on a royalty surcharge basis.

Current users of the Demand 90 system can take advantage of the enhanced Demand 91 features at no additional cost, in line with the company's new policy, Olamic said from 503 N. Euclid, Bay City, Mich. 48706.

DEC WP Gets Sort, Math Tools

SUMMIT, N.J. — Symbolic Systems, Inc. has introduced math and sort utilities for Digital Equipment Corp. word processing (WP) stations.

The Math Utility features the four basic math instructions that can be used for statistical data processing, column and row additions and percent calculations. The package costs $800, the vendor said.

The Sort Utility can sequence a list into the order specified by the user, and handles numeric and alphanumeric data without destroying the original list, the vendor said.

The sort package also costs $800, the vendor said from 25 Chatham Road, Summit, N.J. 07901.

This announcement appears as a matter of record only.

January 15, 1981

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CRT Screen Editor Geared To T/S on Datapoint Minis

KING OF PRUSSIA, Pa. — Trace Electronics, Inc.'s Information Services is offering the CRT Screen Editor for use in the development of screen formats to be displayed on CRT terminals under the Datashare time-sharing system on a Datapoint Corp. mini.

Screen formats are routinely used in on-line business system applications for on-line inquiry, data entry and file maintenance. The CRT Screen Editor reduces the development time required for producing screen formats by allowing a programmer to lay out the format directly on a CRT screen without requiring any programming. Additionally, as changes are made to a screen format, no programming changes are required to implement the revisions on the screen layout.

CRT Screen Editor can be used in a variety of different modes: standalone, DSGEN-compatible or in conjunction with other Trace software development products.

The Screen Editor is available for $650 including reference manual for $6 plus shipping for a perpetual nonexclusive, nontransferable license.

The Trace Macro writing facility DMAC-5 Version 5.4 costs $850 and $20 for the reference manual plus shipping from Trace Information Services, 150 Allendale Road, King of Prussia, Pa. 19406.

Synergetics' Data Dictionary Updated for Honeywell Level 66

BEDFORD, Mass. — Synergetics Corp. has expanded its data dictionary, Data Catalogue 2, with a Honeywell, Inc. Level 66 version with entities reportedly used to define and describe any organization's information processing resources.

The H66 version runs under GCOS and features on-line maintenance and querying under TSS, the vendor claimed, and has the dictionary's standard Generate and Convert facilities.

The Honeywell version of Data Catalogue 2, including first-year maintenance, costs $21,900 from Synergetics, One DeAngelo Drive., Bedford, Mass. 01730.

CMIS Enhances 'MCBA'

CINCINNATI — CMIS Associates, Inc. has announced an enhanced version of the MCBA financial software package for Data General Co. Eclipses running under AOS.

The package includes general ledger, accounts payable, accounts receivable, payroll and order entry/inventory control.

The package costs $4,500.

CMIS is headquartered at 2938 Vernon Place, Cincinnati, Ohio 45219.

Manual Covers NBS Programs

WASHINGTON, D.C. — The U.S. Department of Commerce is offering a two-volume publication describing the set of programs developed by the National Bureau of Standards (NBS) for testing conformance of implementations of Basic to the American National Standard for Minimal Basic, Ansi X3.60-1978.

The 566-page manual (SP 500-70/1 and 2) is entitled *NBS Minimal Basic Test Programs — Version 2, User's Manual.*

Volume 1 — Documentation describes the nature of standardization of the Basic language and how the tests supported the standards.

Volume 2 — Source Listings and Sample Output allows the user to examine the source code in its original form and also get an idea of what the output from a standard-conforming implementation should look like.

The two volumes are available for $4 and $9.50, respectively, from the Supervisor of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock numbers are 003-003-02262-4 and 003-003-02263-2.

Service Gives Marketing Stats

GREENWICH, Conn. — Marketing statistics on the 450,000 establishments that account for 95% of U.S. industrial sales and purchases are available from the Service Bureau Co. (SBC).

SBC is offering the information in conjunction with Economic Information Systems, Inc. (EIS). The service will be known as the X/Market Business Information Service.

The source for the service is the EIS data base. The information there is reconciled to U.S. government statistics on industry size, SIC codes, establishment size, establishment location and other data.

The X/Market Service is available through SBC's time-sharing offices. The basic charge for time-sharing customers is $100 a month, but costs may go higher based on computer time used, amount of data accessed and so on. SBC is located at 500 W. Putnam Ave., Greenwich, Conn. 06830.

Demographics Facility Joins Compuserve Net

COLUMBUS, Ohio — Compuserve, Inc. has added a demographic reporting facility to its line of time-sharing services.

Called Site II, the program is said to allow managers to determine the best location for a new business. The package generates reports that cover a variety of retail businesses and financial institutions, the firm said.

Site II is billed on an as-used basis, the firm said from 5000 Arlington Centre Blvd., Columbus, Ohio 43220.

Introducing China Computerworld

The only specialized computer publication written exclusively for the People's Republic of China (PRC)

The PRC is a huge country with a relatively small installed base of computers. But the future looks very bright for the Chinese EDP business.

Government plans call for extensive use of computers in the PRC's technological modernization, and annual EDP expenditures are expected to grow into the billions in the 80's.

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China Computerworld is a joint venture of the Fourth Ministry of Machine Building and CW Communications Inc. and it includes among its 25,000 subscribers the key government officials and computer managers who have EDP purchase decision authority.

China Computerworld will have three monthly issues in 1980, and will be published twice a month beginning in January, 1981. It has tabloid size and a newspaper format, and gives you a unique opportunity to introduce your products and services to this sleeping giant of a marketplace.

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- How to plan for growth

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The fee per person: $195. And you can charge it to your American Express, VISA or MasterCard account.

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Day 1

7:30 to 8:30 **Registration**

8:30 to 9:15 **Keynote**

9:15 to 10:30 **Industrial Dimensions Panel**
- Business Structure
  - a. An overview of how most OEM's are structured today.
  - b. A look at some emerging trends in the OEM business.
- Market Dynamics
  - a. How strong is the market?
  - b. What are the new growth areas?
  - c. Market shifts in the next five years – what to expect
- Financial Performance
  - a. What growth rate can you afford?
  - b. What is the risk and timing of cash flows?
  - c. Are you growing profitably?

11:00 to 12:15 **Management Challenges**
- Satisfying Customer Needs
  - a. How to help a customer define his needs.
  - b. Specs vs. wish lists.
  - c. The value of dialog
- Supplier Response
  - a. An overview of the response problem.
  - b. Contingency negotiations.
- Building an Organization
  - a. So, you want to be an OEM?
  - b. Key players and roll separation.
  - c. Beat counting today for tomorrow.
  - d. Salary packages.
  - e. Sales force development
- Sales Planning
  - a. The pitfalls and common errors.
  - b. Focusing on your market.
  - c. Key account strategy and how to make it work.
  - d. Analyzing the competition.

12:15 to 2:00 **Featured Luncheon Speaker: Dr. Laurence Peter**
Incompetence: How to Avoid It In The Corporation, including a test you can take yourself (or give to your employees!)

WORKSHOPS: The Growing Influences in Local Networks

2:00 to 3:00
- Network Configuration
  - a. Planning to hold cost down.
  - b. Achieving efficiency in design
  - c. Short cuts that are safe.
  - d. Analyzing the options.

3:15 to 4:15
- The Influence of Intelligent VDT's and Micro Based Systems
  - a. Intelligence, where is it going?
  - b. When will smart do?
  - c. Programming smart terminals to emulate intelligent VDT's.

4:30 to 5:30
- The Minicomputer as Host and Front End

WORKSHOPS: Applications Software: The Major Problem

2:00 to 3:00
- Sourcing Software Packages
  - a. An overview of the problem in today's market.
  - b. Make or buy?
  - c. Evaluating a software house.

3:15 to 4:15
- Application Generating Tools
  - a. Skeleton structures
  - b. Block codes.
  - c. Advantages and disadvantages of both.
  - d. Program generators for Micro systems.

4:30 to 5:30
- Application Dynamics: Planning for Changes
  - a. Transportability
  - b. Compatibility for expansion.
  - c. Holding down overhead.

WORKSHOPS: WATCH

2:00 to 3:00 – DEC Watch
3:15 to 4:15 – DG Watch
4:30 to 5:30 – HP Watch
} Panelists from the manufacturers

WORKSHOPS: Trade-Offs in the Design of Small Systems

2:00 to 3:00 – Alternatives in Systems Configurations

3:15 to 4:15 – Micro: The Answer to the Lack of Mini Portability

4:30 to 5:30 – Super Mini and Super Micro – Where are the Thresholds?

WORKSHOPS: CHECKLIST

2:00 to 3:00
- Memory
  - a. Overview and Future Trends.
  - b. Floppy
  - c. Winchester.
  - d. Controllers.

3:15 to 4:15 – Voice I/O

4:30 to 5:30
- Input/Output
  - a. Printers.
  - b. CRT's.
  - c. Sensor Based.

Day 2

8:30 to 9:15 **Keynote**

9:15 to 10:30 **Major Market Opportunities Panel**
- The Impact of "Supermarkets" on OEM's
- Market Segments Growth Forecast
- New Opportunities in Five Years

11:00 to 12:15 **Obstacles and Solutions Panel**
- The Unending Proliferation of the Market
- First-Time Users: Do's and Don'ts

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- Planning to Meet Growth

15 to 2:00 **Luncheon**
Market Workshops

00 to 3:00 **Europe**
a Are you Ready?
b Is Europe Ready for You?
c. Import/Export. Regulations.
d Licensing
e European Reps
f. Growth.

15 to 4:15 **Far East**
(Same as Europe)

00 to 3:00 **Office of the Future**
- A no-nonsense, hard look at the next five years

15 to 4:15 **Factory of Tomorrow**
a Networks
b Dedicated Systems.
c Microprocessor Applications Area.

ECUTIVE WORKSHOPS

00 to 3:00 - Legal Aspects of Third Party Market

15 to 4:15 - Third Party Finance
a. How much money is needed to start and stay in business?
b. Cash - Credit.

00 to 3:00 - Retail Outlets - Overview

15 to 4:15 - OEM Agreements
a. Franchise Fees.
b. Sales territories.
c. Quotas, credit, payment
d The OEM Question
- Is there a requirement?
- How to fulfill the requirement?
- What can it accomplish?

ORKSHOPS: WATCH

00 to 3:00 - TI Watch
15 to 4:15 - Perkin-Elmer Watch
} Panelists from the manufacturers

2:00 to 3:00 - SPECIAL SESSION PRESENTED BY ADAPSO (THE ASSOCIATION OF DATA PROCESSING SERVICE ORGANIZATIONS) BUSINESS CHALLENGES FOR THE 80's

A PANEL OF INDUSTRY EXECUTIVES WILL DISCUSS THE MAJOR BUSINESS CHALLENGES FACING THE INTEGRATED SYSTEMS SUPPLIER IN THE 80's INCLUDING MARKETING, FINANCIAL PLANNING AND SOFTWARE DEVELOPMENT ISSUES.

MARKETING
- Planning - Geographical or Vertical
- Advertising
- Account Control

FINANCIAL PLANNING
- Forecasting
- Budgeting
- Statements

SOFTWARE DEVELOPMENT
- Fixed Fee
- Customer Control
- Appropriation of Resources
- Staffing

To Be Chaired By: - Jerome L. Dreyer President of The Association of Data Processing Service Organizations

Speakers: - James Anderson, Systems Manager, Xerox, Computer Systems Division. 1981 Chairman of ADAPSO
- Jack Courtney, Vice President, Computer Task Group, Buffalo, New York

Featured Speakers

KEYNOTERS

Mr Paul M. Davies
President/CEO
Point 4 Data Corp

Mr Robert Wickham
President
Vantage Research

PLUS MANY OTHER INDUSTRY LEADERS, INCLUDING:

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Sales Manager
Centigram

Mr. Al Michaels
President
Convergent Technologies

Mr. Gary Hedge
Vice President Marketing
MCBA

Mr Harry Saal
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Nestar Systems

Mr. Oscar A. Rosenhloom
Marketing Director
MicroTech Exports

Mr James McCoy
Vice President Marketing
Quantum

Mr Peter F Zinsli
Vice President
Rexon Business Machines Corp

Mr. Jerome L. Dreyer
President
Association of Data Processing Service Organizations

Mr James Anderson
Systems Manager
Xerox

Mr Richard Stephen Hayes
Author/Professor
Business Loans
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Apple Computer Inc.

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OR	Anyone involved in the selling, reselling, distribution, assembly or integration of computer components, products, or systems

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Cost is $195 for two full days of sessions and lunch each day. There will be a $50 service charge for cancellations after March 3. Registration may be transferred at no charge. Contact the Hyatt Regency directly for hotel accommodations at, call *toll-free* 1-800-228-9000. Or, in California, call 415 788 1234

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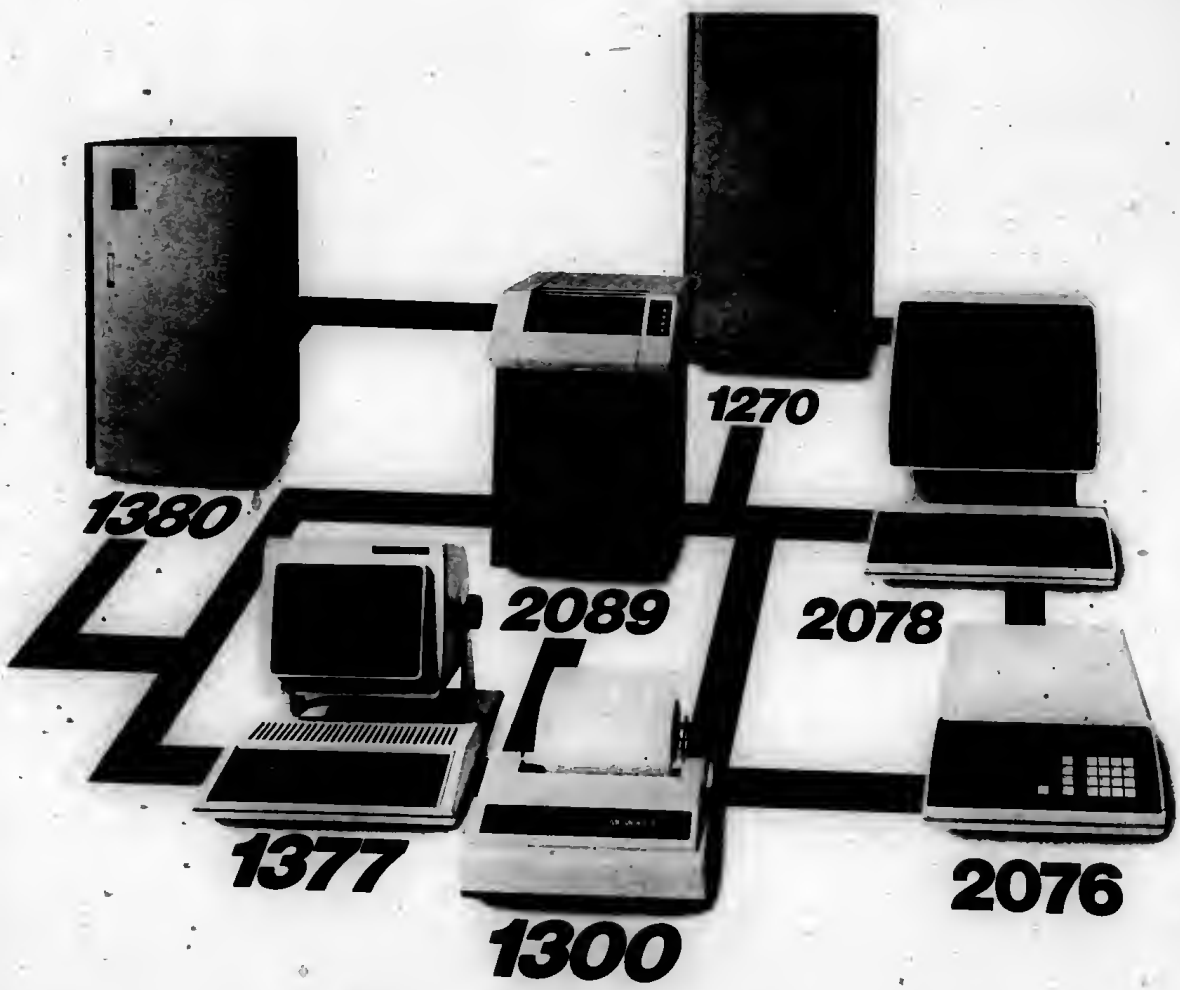

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Tax Incentives Lacking

Regulation Held Slowing Broadband Use

HOUSTON — Federal regulation of telecommunications has worked against a sudden user migration from narrowband local data networking to broadband implementations that offer much faster throughput, a prominent telecommunications lawyer told a recent conference session here.

Rulings by the Federal Communications Commission (FCC) and Supreme Court during the past several years have allowed the video entertainment side of telecommunications to contend fiercely for satellite channels that commercial DP users want for remote point-to-point processing, Terry Mahn, former general counsel to the Computer & Communications Industry Association, told a panel at Communication Networks '81.

With respect to data communications, the toughest nut for the FCC to crack in coming years is scarcity of satellite channels as the available orbital spectrum becomes overcrowded, Mahn said. Although the commission recently authorized 20 satellite launchings for 25 space-traveling transponders, this tripling of the nation's transponder resources will only push the projected saturation date — when the capacity of U.S. satellites for relaying data traffic is exhausted — from 1983 to 1986.

Rapid Depreciation

Authority to regulate local data loops — networks within a building or cluster of adjacent buildings — has shifted to the state level, Mahn noted, where public utilities commissions impose rate base controls that prevent rapid depreciation of local loop equipment. This tax situation inhibits replacement of existing narrowband gear with the faster, more efficient broadband gear, he explained.

If rapid depreciation were allowed, users would need less time to recover capital investments in the equipment and could move to the coming broadband products more rapidly.

In general, government has moved to deregulate the sale and use of customer premises communications equipment, Mahn noted. The FCC's Second Computer Inquiry resulted in a ruling that deregulation of on-site gear — not presently included in a phone company's rate base — take efect March 1, 1982. As the "dominant carrier," AT&T may only sell customer premises gear through a separate subsidiary — the so-called "Baby Bell" — after that date.

Mahn said this will mean lower costs to the user for many data communications products and more prolific innovation in the technology over years to come.

However, the two-way rooftop earth stations many users will need for satellite communications are not considered customer premises equipment in this regard, making

(Continued on Page 64)

Network Supervisory System Offered in Turnkey Version

HORSHAM, Pa. — Digi-Log Systems, Inc. has announced a low-cost, turnkey version of its Network Supervisory System as well as a programmed remote control switching system for communications networks.

The turnkey Network Supervisory System costs $10,378 for an eight-line configuration. The system is equipped with automatic monitoring and alarming, testing and reconfiguration features for eight lines plus a DLM III Data Line Monitor.

The system is said to address communications line supervision, EIA interface surveillance, automatic visual and audible alarm conditions, network reconfiguration through patching, communictions line testing and protocol monitoring and simulation.

The remote switching system was designed around the firm's DSC-1250 Digital Switch Controller containing the system control program in 4K bytes of nonvolatile memory.

Each switch subsystem comprises one or more DS/50 Slave Controllers, each of which controls up to 16 individual DS/40 A/B switch modules. The remote switching system controls up to 4,096 A/B switches at the control center, and 4,096 in remote locations throughout the network. Switching commands and switch status information between the control center and remote switch sites are transmitted over dial-up lines, private point-to-point or multipoint data communications facilities.

A switch status log, maintained at the control center, can be displayed on the CRT screen and/or printed on a console printer.

Switch control can also be performed by a user-supplied computer system and application software. The DCS-1250 costs $3,900, the DS/50 costs $1,300 and the DS/40 costs $295 from the vendor at Babylon Road, Horsham, Pa 19044.

How Will Technology Affect Business Communications?

CLEARWATER, Fla. — How new technology will alter business communications networks in the 1980s for users and provide growth opportunities for manufacturers and investors will be explored at an industry conference presented by Dataquest, Inc. here on Feb. 23-25.

An overview of the telecommunications and business communications markets will be presented by Martin W. Fletcher and Victor Krueger, vice-presidents of Dataquest, Inc. Donald Massaro, president of the Office Products division at Xerox Corp., will discuss trends and directions in communication for offices of the future, and Jack Carsten, vice-president of Intel Corp., will be on hand to address the opportunities that large-scale integration technology offer for telephony and data communications.

Gerald Tomanek, manager of PBX products at the Rolm Corp., will discuss the role PBXs and office terminals will play in the '80s.

Clients of Dataquest's Telecommunications Industry Service may send one representative to the conference without charge. Nonclients are invited on a space-available basis.

More information is available from Dataquest, Inc. at 19055 Pruneridge Ave., Cupertino, Calif. 95014.

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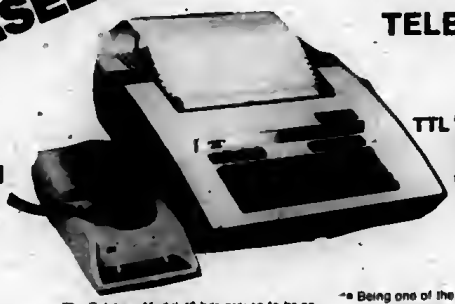

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Portable Reporting System Designed for Retail Chains

NEW YORK — MSI Data Corp. is offering a multipurpose portable electronic data reporting sytem designed for in-store use by retail chains with centralized computer information processing.

The Retail Administrative and Merchandising System (Rams) uses hand-held terminals to collect data in the store and transmit it by telephone to a central computer. Also used are a range of vendor retailing programs resident in the terminal which can be used or adapted by a wide variety of users, the vendor claimed.

The two terminals that go with the system range in price from $1,200 to $2,700 and the software costs between $1,000 and $7,000, depending on the nature of the data to be collected, the vendor said from 340 Fischer Ave., Costa Mesa, Calif. 92626.

PE 32-Bit Minis, CRT Units Tied

ORLANDO, Fla. — Transaction Data Systems, Inc. has announced a package that allows users of Perkin-Elmer Corp. 32-bit minicomputers to use multidropped PE 1245, 1250 and 1251 CRT terminals.

The MDP32 package interfaces with either PE's Integrated Transaction Controller or through the user task SVC 1 calls, the vendor said.

The package supports up to 32 terminals and costs $5,000 for a single CPU license. Transaction Data Systems said from 5750 Major Blvd., Orlando, Fla. 32805.

Broadband Use Seen Hindered

(Continued from Page 63)

prospects for a continued drop in the cost of earth stations hard to anticipate, the Washington, D.C., attorney indicated.

Settlements Pool

Another regulatory matter that affects the outlook for interstate data communications is the FCC's effort to require interstate carriers to contribute local hook-up charges to a "settlements pool." This discourages the carriers from leaping into the local-net arena, Mahn suggested, and probably raises user demand to achieve greater efficiencies at the local-net juncture that would compensate for increased carrier charges.

The FCC may also open up the Multipoint Distribution Service (MDS) offered by satellite carriers, he continued. At present, MDS is swamped with applications by aspiring customers in the video entertainment field, where 107 markets have reportedly been denied entry thus far.

However, 10 6-GHz channels of MDS may be freed for data communications in the next few years, Mahn surmised.

Sporadic Delays

Journalist/consultant Ronald A. Frank, who chaired the conference panel, noted that a "national account" customer of Bell recently was told by the dominant carrier that occasional use of satellites will inflict sporadic propagation delays in communications.

Satellite propagation delays occur because data signals traveling at the speed of light take measurable time to reach orbiting spacecraft and rebound to receiver stations.

If other Bell users face this problem, Frank pointed out, they can turn to alternative carriers that offer a means of compensating for propagation delays, which otherwise disturb the integrity of long-haul point-to-point traffic.

Communications Course Slated

MADISON, N.J. — "Data Communications Systems" is a short course being conducted at a variety of dates and places by the American Institute for Professional Education. The program covers the implications of the merging technologies of data processing and data communications in today's constantly evolving market.

Dates and sites include San Francisco, Feb. 25-27; Portland, Ore., March 4-6; Indianapolis, March 11-13; Philadelphia, March 18-20; Houston, March 25-27; and Boston, April 1-3.

The course was specifically designed for those new to the data communications field and those who need to be updated on recent developments in the industry. Kenneth Sherman, author of *Data Communications: A User's Guide*, will conduct the course.

Registration costs $595 per person, with group discounts available from the institute in the Carnegie Building, Hillcrest Road, Madison, N.J. 07940.

Study Released On Opto-Electronics

SUDBURY, Mass. — International Communications & Energy, Inc. has released a study on opto-electronics called "Fiber-Optics Blueprints for the Future."

The study focuses on computers, communications, satellites, military systems and semiconductors for the next decade, the vendor said.

The 928-page report costs $12,000, the vendor said from 96 Stock Farm Road, Sudbury, Mass. 01776.

ONCE UPON A TIME, in a kingdom far away, there lived a hard-working merchant.

Usually, the merchant was the merriest of men, happy with his calling and ready with a smile for everyone he met. This day, however, found him trembling in fear at the edge of the Great Unknown Forest, a sack slung over his shoulder. You can imagine how his heart jumped when a voice behind him asked, "What do you have in your sack, merchant"?

Spinning around, the merchant saw a tall figure, with a flowing white beard and robes, and eyes that shone with both wisdom and kindness. "I have notices to the people of the kingdom," blurted out the merchant, "telling of all the goods I'll have on my wagon when I come to visit them in the spring."

"But why are you taking them through the Great Unknown Forest?" asked the tall stranger. The merchant answered hurriedly, [illegible] has made a Royal Proclamation. From [illegible] notices to the kingdom will [illegible] to send, and they will [illegible] But are brought to the Royal Post Office on the other side of the Great Unknown Forest. That's where I'm going now, Sire. But I'm very afraid, for everyone knows there are many fearful monsters there."

"You need not be afraid," said the white-haired stranger softly. "I am a Sage, wise in the ways of the Great Unknown Forest. I know how to cross the Forest safely, and I can unlock the great riches to be found there. Come, merchant, I will guide you."

The merchant learned much that day. He learned that the Nine-Digit Zip Code Monster, while indeed quite unnerving on first acquaintance, might not be quite the horrible creature so many people said he was. He learned that the terrible Postal Carrier Route Monster wasn't going to entangle him hopelessly, as many said it would. It just wanted to get his notices to the villagers faster than ever, and for 20% fewer pennies than before. Most important, the merchant learned that, whenever he faced new address-matching and geocoding problems, the Sage could show him how to turn those terrible unknowns into profit-making opportunities.

From that day forward, the merchant was happy and prosperous. He married the king's beautiful daughter (didn't I mention her?), and they lived happily for quite a while.

Lee Data Updates Series 300 System

MINNEAPOLIS — Lee Data Corp. has added features to its Series 300 display system for use in application development and monitoring of system performance.

Lee Data's Series 300 is compatible with all models of IBM's 3724 Control Unit. It includes the All-In-One Display, which contains four screen sizes compatible with IBM's 3728, and Lee Data's Coax Eliminator.

The enhancements include a disclose mode, which highlights attribute characters used by application programmers to define the characteristics of data fields, a spokesman said.

Another feature measures CPU response time and displays it on the operator station.

An added line/channel trace feature records data exchanges and displays them in hexadecimal or character format.

The cost of a Series 300 system, including a remote controller, seven All-In-One displays with keyboards, a 120-char./sec printer and a Coax Eliminator is $37,080; on a three-year lease, it costs $931/mo.

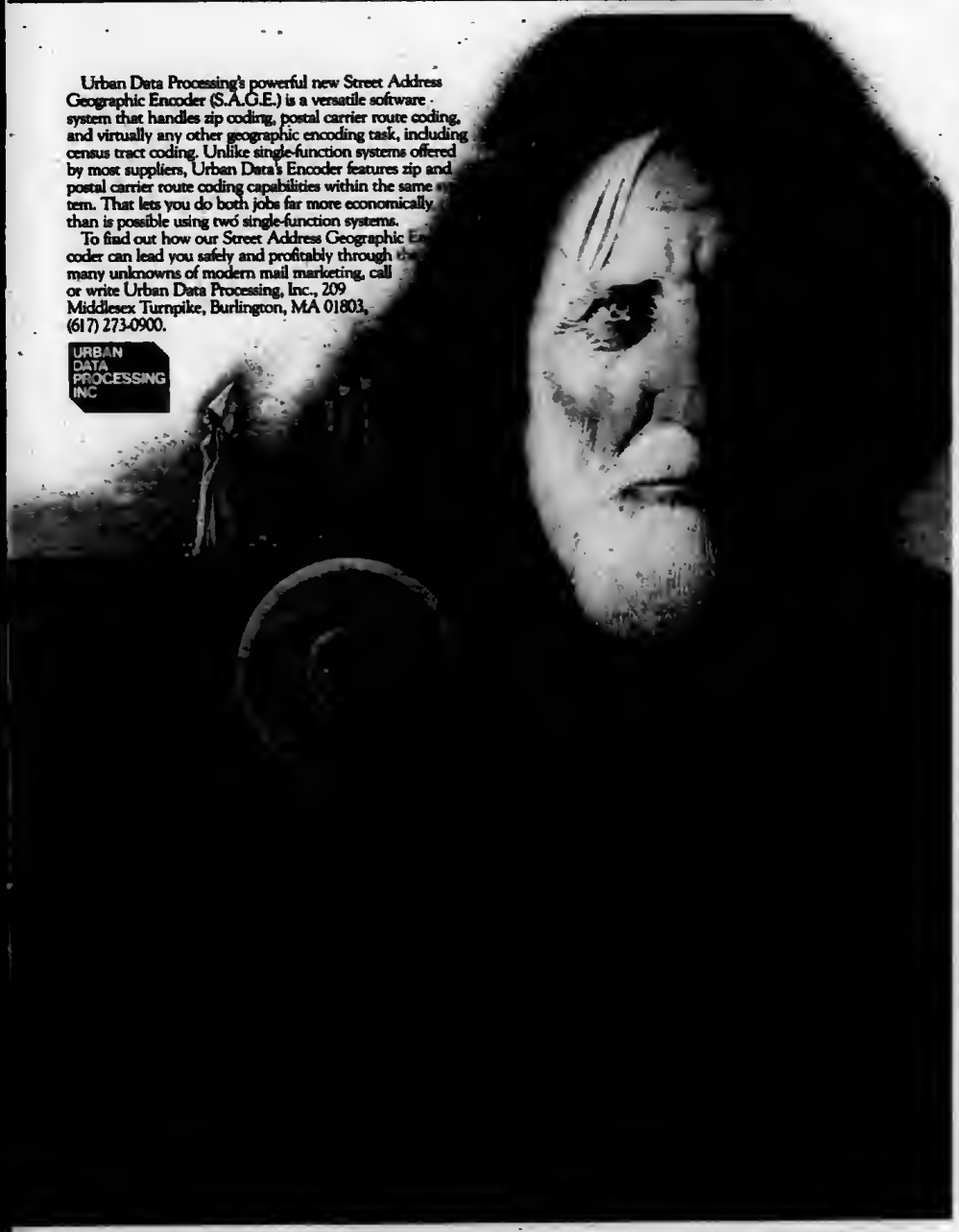
A local Series 300 system can be purchased for $44,800 and leased for $1,136/mo., according to the vendor at 10206 Crosstown Circle, Minneapolis, Minn. 55344.

Supermux 680 Gets Console

CHERRY HILL, N.J. — Enhancements to the Infotron Systems Corp. Supermux 680 statistical multiplexer reportedly enable it to communicate with multiple units from a central, customer-provided console. The console may be used to diagnose problems, transmit messages and receive status reports.

The console may be an Ascii-compatible CRT or printer terminal, and is connected to a separate reporting channel interface on colocated Supermux 680 units. The console may also be remotely located from the multiplexer, the vendor claimed.

The base price for the multiplexer is $7,000, the vendor said from Cherry Hill Industrial Center, Cherry Hill, N.J. 08003.



TI 743/745 Modified To 132-Col

BURLINGTON, Mass. — Texprint, Inc. has introduced a modification that reportedly turns the standard 80-column Texas Instruments, Inc. 743/745 into a 132-column portable terminal.

The two-step, fully reversible modification replaces the socketed microprocessor with a small printed-circuit board and changes the motor pulley and cable.

The enhancement operates via the TI terminal on standard 8-1/2-in. paper. Either 80- or 132-column operation is code-selectable.

Ascii Keyboard

The Texprint 132 may be installed in TI terminals with limited Ascii keyboard (uppercase), with or without answer-back memory option.

Texprint 132s also are available for terminals with full Ascii keyboards, APL keyboards and solenoid line feed, a spokesman said.

Texprint 132 is available for $375. OEM quantity pricing is available, the vendor noted from 8 Blanchard Road, Burlington, Mass. 01803.

Terminal Screen Touch-Sensitive

BOHEMIA, N.Y. — A terminal with a touch-sensitive screen has been introduced by TSD Display Products, Inc.

Potential application areas of the TST-40 include management information systems, medical data base systems and computer-aided learning.

The TST-40 costs $4,500. OEM quantity orders exceeding 50 will cost $3,000 each, according to the vendor at 35 Orville Drive, Bohemia, N.Y. 11716.

HP 2635Bs Get Multilinguality

PALO ALTO, Calif. — International keyboards — with the character sets and key placements for each language — are available for Hewlett-Packard Co. HP 2635B printing terminals.

The optional keyboards are offered in German, French, UK, Spanish, Swedish/Finnish and Norwegian/-Danish designations. The options provide both 7-bit and 8-bit data communication codes.

The keyboards cost $100 each from HP at 1501 Page Mill Rd., Palo Alto, Calif. 94304.

Bell Canada Sets Fiber-Optics Test

OTTAWA — The Computer Communications Group (CCG) of Bell Canada has selected two customers — Datacrown, Inc. and Canada Systems Group — to participate in a full-scale test of fiber-optic technology for data communications.

The test, scheduled to begin in March, will mark the first time fiber optics has been used to transmit high-speed data in the field, CCG said.

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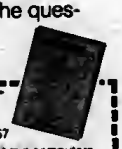

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CHATTANOOGA, Tenn. — Although *The Chattanooga Times* shared the same hot type and cast lead plate history as other newpapers, it did not go the well-worn, multiple-minicomputer route when it came time for computerization.

Instead, this more than 100-year-old newspaper, started by Adolph S. Ochs, later owner of *The New York Times*, selected a dual Sperry Univac 90/30 general-purpose computer system, reducing overall computer costs by about 30%.

"Most newspapers have three computers, a minicomputer for production, a second for backup and a third computer for accounting, *The Chattanooga Times'* Claude Bell, DP manager said. "We wanted to install only one general-purpose computer and a backup, both of which would process production as well as accounting, thus eliminating the need for a third computer."

Search Committee

The newspaper's quest for an editorial computer began in 1977 when it formed a search committee to automate the writing end of the paper's function. The newspaper had operated a computer system since the early '70s, but only for accounting applications, Bell explained.

Based on an extensive survey of all available equipment plus field trips to observe equipment in operation, *The Chattanooga Times* installed two Sperry Univac 90/30 general-purpose computer systems, one with 393K bytes and the other with 327K bytes.

Processing not only accounting applications but production work, the 90/30 general-purpose computer systems provide proven RPG-II and Cobol compilers for efficient updating of accounting data and an IMS-90 information management system which facilitates interactive data entries, inquiries and updates to any number of on-line files.

"We were also able to lease rather than purchase the systems. This gives us the capability to improve our operations by upgrading to improved systems at minimum cost in the future," Bell said.

Editorial production was automated on the systems in January 1980. This involved using 10 Univac UTS 400 text editors and 18 Univac UTS 400 terminals linked to the 90/30 processors.

As a result of systems operation, editorial production is now faster, more efficient and better controlled, according to Wesley M. Hasden, assistant managing editor who served on the search committee.

'A Better Newspaper'

"Use of the system to automate editorial production is enabling us to produce a better newspaper," Hasden stated. "For our needs, our size paper and the money we had to spend, the systems do everything they have to do. We're not only accomplishing what we wanted to accomplish, but doing as much if not more than we envisioned."

Hasden pointed out that *The Chattanooga Times* is now able to speedily meet tighter deadlines as a result of automated editorial production. "We can now get copy in at 11:15 or 11:20 and still meet an 11:30 deadline," he explained.

"Previously, we couldn't get something at 11:00 and still get it in the paper. Now, 10 minutes after something happens anywhere in the world, we can immediately use it as long as it's in our network.

"Overall, we jumped from a 100-year-old composition system to a modern text editing system in five years," Hasden added.

The paper's 10 UTS 400 text editors are normally operated by 15 editorial personnel, including the managing editor, assistant managing editor and rewrite editors, while 18 UTS 400 terminals

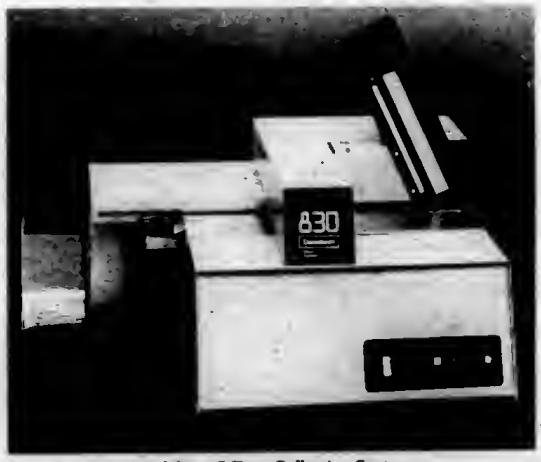
(Continued on Page 68)

OCR, Data Collection Systems Out

FRAMINGHAM, Mass. — Dennison Manufacturing Corp. has introduced two optical character recognition (OCR) systems and a data collection system.

The OCR Printacher System prints and attaches OCR price tickets to soft goods in a single operation, thus speeding the goods to the sales floor. The device starts at $3,000.

Dennison's Model 7110 Portable Marking System improves remarking speed and assures label placement for accurate machine reading using a retractable tag holder, according to the firm. With the holder retracted, the 7110 can be used for primary media marking. The 7110, which also offers impact printing, costs $249.



Model 830C Data Collection System

The Model 830C Data Collection System automatically feeds, reads, records and sorts at speeds up to 160 tickets per minute, depending on the size and amount of data to be collected.

Data retrieved by the system's optical batch reader is recorded on diskette in the data collection terminal.

Output from the diskette, which has a capacity of up to 9,400 ticket records, is IBM 3741-compatible. The price for this device starts at $24,500.

Dennison is at 300 Howard St., Framingham, Mass. 01701.

Computer Room Shield Stops Electronic Eavesdropping

NORWALK, Conn. — Keene Corp. has unveiled a radio frequency shielded computer room enclosure to prevent electronic eavesdropping on computer rooms.

The shield reportedly protects the computer room from bugging and data theft by erecting a continuous conductive shield constructed of modular, laminated metal panels and doors. The shielding works like electronic soundproofing, the vendor claimed.

The price of the shielding depends on the size and architecture of the computer room. A mid-size computer room would typically cost about $100,000 to protect, Keene said from Ray-Proof Shielding Division, 50 Keeler Ave., Norwalk, Conn. 06856.

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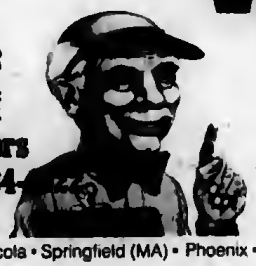

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TI-785
TI-787
TI-810/820P's

Emergency Program Offers Short-, Long-Term Backup

RIDGEWOOD, N.J. — Computer Alternatives, Inc. is offering a contingency plan that provides short- and long-term backup services to guarantee access, under emergency conditions, to its network of 36 computer sites in New York.

The program includes free technical and logistical support to and from the sites, permitting users to resume operations within four hours.

For long-term disasters, Computer Alternatives can provide a shell in northern New Jersey with 2,000 sq ft of space.

The cost of the backup plan ranges from $800 to $2,000/mo, depending on the user's system. The long-term recovery plan costs approximately $700/mo. Discounts are available to subscribers to the short-term plan, the vendor said from 555 Goffle Road, Ridgewood, N.J. 07450.

Laser Scanner Bows

BELLMAWR, N.J. — A high-speed, noncontact laser scanning system has been introduced by Metrologic Instruments, Inc. to read bar code labels.

The MS105 communicates via RS-232 ports and relay closures. The basic system, including scan head and computer, costs $4,875 from Metrologic, P.O. Box 307, Bellmawr, N.J. 08031.

Tektronix 4027 Gets Hard Copy

IRVINE, Calif. — An interface which generates full-color, plain-paper hard copy for the Tektronix, Inc. 4027 color terminal on Trilog, Inc.'s Colorplot Model C-100 has been introduced by Trilog.

Full-color hard-copy output can be produced in approximately three minutes, Trilog claimed.

Using the HC4027 interface, the operator can select either the color terminal or the host computer to drive the Colorplot. Any legitimate 4027 terminal hard-copy command will start the color copy sequence.

The HC4027 costs $3,200 from Trilog at 1739 Murphy Ave., Irvine, Calif. 92714.

Daily Reports Savings of 30%

(Continued from Page 67)

are used by about 30 reporters. However, all personnel are capable of using both units, resulting in maximum operational flexibility.

Story ID

To enter a story in the UTS 400 terminals, reporters first key in a 12-character identification number, while the editorial production system automatically records date and time of entry. The story identification number includes codes for reporter identification, page location, daily or future use, date story is scheduled to run and a consecutive number for each story by each scheduled date. Following entry, stories are simultaneously stored in reporter logs and transmitted to an editorial file. Reporters can check and revise stories in their own logs, but do not have access to stories in the editorial file.

Editors use the UTS 400 text editors to call up stories from the editorial file based on any code or combination of codes contained in story identification numbers.

The UTS 400 text editors are also used to process *New York Times* wire service stories, an AP data stream consisting of sports, financial, state news and feature wires and an AP data feature service including syndicated columns. In the future, the editorial production system will be capable of accepting remote input from out of town bureaus. The software system used for editorial production is also capable of processing classified advertising.

The Univac 90/30 systems currently are used to operate a circulation system on a batch basis. However, work is now being performed to convert this system to an on-line mode in which route number assignments, customer billing and other circulation operations will be processed automatically.

The 90/30 systems are also used for processing all general ledger applications, including billing, accounts receivable, accounts payable and fleet accounting. Payroll is run on-line. Other applications will be converted to run on-line from a batch system.

"Use of general purpose rather than minicomputers makes it possible for *The Chattanooga Times* to develop towards a total system," systems manager Bell concluded. "In addition, we have the capability to convert to more economical and efficient general-purpose systems as they become available in the future."

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Mini Bits

Telefile Disk System Runs on Univac's Varian V-70

IRVINE, Calif. — A Telefile Computer Products, Inc.-developed disk system is now available for users of the Sperry Univac Varian V-70 series computer.

The transparent software driver, designed to interface with Vortex software, supports seek overlap as well as track overlap. Called the DC-16, it can be used for applications ranging from parts assembly to law enforcement to administration, according to the vendor.

The Telefile-modified Vortex operating system with disk handler is also compatible with Microvortex systems. The device costs $24,100 for a 300M-byte disk. Telefile is located at 17131 Daimler St., Irvine, Calif. 92714.

Octo-Density Disk Drive Runs on Chieftain Series

WESTLAKE VILLAGE, Calif. — Smoke Signal Broadcasting has announced an "octo-density" 5.25-in. flexible disk drive on its 6809 series of Chieftain small business computers.

The drive offers 1M byte of formatted storage and costs $4,075.

The vendor is at 609 Deep Valley Drive, Palos Verdes, Calif. 90274.

Micro/Memory Module Plugs Into PDP-11/03 Mini

WESTLAKE VILLAGE, Calif. — A stand-alone microcomputer system that can be plugged into the Digital Equipment Corp. PDP-11/03 minicomputer system as a memory enhancement has been announced by Chrislin Industries, Inc.

The 32K-word by 16-bit dynamic random-access memory module has an access time of 300 nsec from sync active, with a cycle time of 525 nsec, the vendor said. On-board memory select is available in 2K-word increments up to 128K words, the vendor said.

The two-board system is priced at $1,050 with a one-year warranty from Chrislin Industries, Inc., No. 102, 31352 Via Colinas, Westlake Village, Calif. 91361.

Half-Inch Tape Drives Run On LSI-11-Based Minc Systems

SAN DIEGO — Dylon Corp. has introduced a .5-in. magnetic tape system that is compatible with Digital Equipment Corp.'s LSI-11-based Minc instrumentation system on the Minc standard IEEE-488 interface bus.

The Model 9001 is a 10.5-in. reel series that offers a nine-track, dual-density 800- and 1,600 bit/in. flexibility at up to 75 in./sec and transfer rates up to 100,000 bit/sec, the vendor said.

Model 9001 tape drives cost between $8,955 and $13,195, the vendor said from 3670 Ruffin Road, San Diego, Calif. 92108.

Board Hooks 128K-Byte Proms To Multibus Systems

CHAMPAIGN, Ill. — Users can reportedly hook from 2K to 128K bytes of programmable read-only memory (Prom) to a Multibus system with a strap-selectable Prom board available from Central Data Corp.

The board decodes the full 24-bit address bus, allowing a systemwide address space for 16M bytes. It operates in read-only mode for either 8 or 16 bits, depending on the state of the Bhen line, the vendor claimed.

The board costs $185, the vendor said from 713 Edgebrook Drive, Champaign, Ill. 61820.

Desktop WP/DP System Has 5M-Byte Winchester

The Vector 3005

WESTLAKE VILLAGE, Calif. — Vector Graphic, Inc. has introduced a desktop word and data processing system featuring 5M bytes of Winchester hard-disk storage.

The Vector 3005 is said to be the first desktop computer that incorporates Winchester technology into its disk design.

Billed as an information system, the 3005 has a mini-Winchester drive, a 630K-byte double-sided, quad-density floppy disk drive, a Vector 3 CRT terminal and keyboard. Software provided with the system includes Digital Research, Inc.'s CP/M-2 operating system, the firm's Scope editor and Raid debugger, ZSM assembler and Microsoft Basic 80.

Optional software offerings consist of Peachtree business accounting packages and the vendor's Memorite III word processing and Execuplan financial planning software.

The unit's Winchester disk can handle up to 256 different files, about twice the capacity of the firm's most directly comparable system, the Vector 2800. For postal aficionados, the single hard disk can store a mailing list of up to 3,700 names and addresses, a spokeswoman said.

Error-Correcting Board

The 3005 features a dual mode controller board that coordinates the activities of both the Winchester and the floppy disk drives. The board is also the key to the system's error-correcting capabilities.

Based on IBM technology, the board automatically corrects up to five erroneous bits in every 256 bits, eliminating errors due to disk contamination, aging, surface defects and all but the most severe disk damage, the spokeswoman claimed.

The error-correcting scheme also operates on the floppy disk data, reportedly the first time this feature is available on floppy diskettes.

The track-to-track access time of the Winchester is 3 msec, the same as the unit's floppy disk companion. Both the floppy and the Winchester are housed in a separate unit that fits adjacent to the CRT terminal.

Buffering Feature

The disk controller also features 256-byte sector buffering, reportedly making the 3005 useful for communications and other real-time functions.

The buffering enables the CPU to simultaneously handle interrupts and data transfers in and out of memory, the spokeswoman explained.

The system can use either the firm's Sprint 3 daisywheel printer or a dot matrix printer for word processing and data processing chores, respectively.

The system is targeted for accounting, insurance, financial consulting and other small business applications and is also outfitted to operate in factory and other severe environments.

The Vector 3005 costs about $7,950 and can be ordered from the firm at 31364 Via Colinas, Westlake Village, Calif. 91362.

Qualex Triples Tape Density For HP 1000 Users

WESTLAKE VILLAGE, Calif. — A triple-density tape system for users of the Hewlett-Packard Co. 1000 has been introduced by Qualex Technology, Inc.

The Qualex Group 1000 is compatible with the HP 21MX-E, 21MX-F, 21 MX-M and 2100A processors. It features switch-selectable densities of 800-, 1,600- and 6,250 bit/in.

The system features Ansi/IBM compatibility, radial interface for up to eight drives per controller, auto thread/load for open reel and cartridge, Qualex diagnostics and software driver.

The Qualex Group 1000 ranges in price from $34,000 to $52,000, depending on optional features ordered, the vendor said from Suite 111, 31220 LaBaya Drive, Westlake Village, Calif. 91361.

Small System Show Slated for August

NEW YORK — The Fifth Annual National Small Computer Show will be held here Aug. 26-29 by Little Bros. Shows, Inc.

A full schedule of free lectures will be presented daily, and there will be a five-hour seminar for executives who wish an overall introduction to the understanding, acquisition and use of computers in business.

Registration for the show will remain at $10 per day, and the executive seminar is $200 per person, which includes all materials and show registration. More information can be obtained from the show office at 110 Charlotte Place, Englewood Cliffs, N.J. 07632.

Expand Barrister, Accutext

Shared Logic System, Interfaces Aid Law Firms

BUFFALO, N.Y. — Comptek Research, Inc. has introduced a shared logic system providing financial management and word processing (WP) capabilities, as well as two interfaces which expand the Barrister Law Office and Accutext Word Processing Systems.

Intended for law firms ranging in size from five to 15 attorneys, the Barrister/110 features a CPU, 2,000 pages of on-line storage, a CRT terminal for input and editing and a daisy wheel printer.

Features include cursor editing, automatic page numbering and renumbering, automatic paragraph numbering, automatic table of contents and table of authorities, automatic footnoting, sorting, global search and replace and a math package.

A basic financial management program, which automates the time and disbursements billing and general ledger functions of the law firm, is also a standard feature.

The Barrister/110 can be expanded to four terminals or printers and four disk storage units. The basic package costs $26,100.

Support Packages

Comptek has also added two printer support packages that provide interfaces to link Barrister and Accutext computer systems to the IBM 6640 Ink Jet Printer and the 6670 Laser Printer.

The 6640 Document Printer utilizes high resolution, dot matrix, ink jet printing and prints at a speed of 77 to 92 char./sec.

The 6670 Information Distributor utilizes electrostatic laser printing technology and outputs at a rate of 26 page/min.

'Rapid Throughput'

With the new interface, documents can be sent from Barrister and Accutext systems with printing instructions imbedded in the text, providing rapid throughput of all printed information. When interfaced to the 6670 Laser Printer, documents can be printed or copied automatically, the firm said.

Barrister and Accutext systems can be linked to either of the IBM printers through a direct connection or via telephone lines utilizing IBM 2270 Binary Synchronous Communications.

The Ink Jet Printer Support Package and Laser Printer Support Package costs $6,000 from Comptek at One Technology Center, 45 Oak St., Buffalo, N.Y. 14203.

Turnkey Package Cuts Design Time As Much as 90%

CINCINNATI — A turnkey package is being offered by Cincinnati Data Systems, Inc. that reportedly cuts the time to define and design a system by as much as 50% and sometimes by as much as 90%.

The turnkey system, dubbed "Smart," performs data entry and validation, creates and maintains master and detail files, updates and/or posts detail transactions, performs special period-ending master-file processing and format control and calculations in report printing.

Beginning at $20,000, the basic system includes a Centurian minicomputer, a hard disk with 10M bytes, an Applied Digital Data Systems, Inc. CRT terminal and one of various printers, plus the Smart software.

The vendor can be reached at 4250 Creek Road, Cincinnatti, Ohio 45241.

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Two Companies in Transition

• DG Setting Goals

By Marcia Blumenthal
CW Staff

BOSTON — "We are becoming a company managed less by individuals and instincts and more by objectives and policies," Edson D. de Castro, president of Data General Corp., declared at the company's annual meeting here recently.

Edson D. de Castro

Labeling the firm's recent operating margins in the 13% range unsatifactory, de Castro blamed the performance in part to the transition the company is now undergoing. He said he did not know when or even if DG could return to its 18% to 20% pretax profits earned in the last decade.

Earnings have also slowed. Last year DG's earnings grew 9.6% compared to the 23% growth in earnings between 1978 and 1979. To what extent that transition weakened sales of the company's staple low-end Micronova, Nova 4 and CS small

(Continued on Page 74)

• Burroughs Mending Flaws

W. Michael Blumenthal

By Marcia Blumenthal
CW Staff

NEW YORK — A "fatal fascination" with reported net profits made Burroughs Corp. "follow policies which did not ensure growth over the long run."

After making that statement and announcing the precipitous drop in the company's earnings from $7.45 per share in 1979 to $1.99 per share last year, W. Michael Blumenthal, chairman and chief executive officer, outlined his view on the company's future here at a hastily convened analysts meeting recently.

Speaking to some 200 analysts and members of the press, Blumenthal honed in on some of the company's shortcomings. He cited as particularly serious problems with service and support, a lack of coordination between manufacturing and marketing and a faulty distribution system.

(Continued on Page 76)

Industry Loses Minimum Wage Battle

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Regulations extending controversial Service Contract Act minimum wage standards to providers of federal data processing and computer maintenance services have been finalized by the U.S. Labor Department.

Despite vigorous lobbying against the regulations by the Computer and Business Equipment Manufacturers Association (Cbema), the regulations were put through Jan. 16 during a governmentwide rush to finish up regulatory proceedings before the start of the Reagan administration.

The wage rules, which take effect Feb. 17 for numerous types of services from aerial spraying to warehousing and storage, include provisions for data collection, processing and analysis and electronic equipment maintenance, operation and engineering support services.

Opposition Voiced

Reacting to the Labor Department action, a Cbema spokesman said, "We continue to oppose the inclusion [of DP services] under the Service Contract Act . . . and we will push in the new administration for sn exemption and for some sort of legislative amendment as well." Also, there is the possibility affected companies may sue the government to have the regulations repealed.

The association and several DP industry firms contend the 1965 law, originally intended to protect the wages of blue-collar service workers and extended in 1976 to white-collar employees, was never meant by Congress to apply to relatively high-salaried workers, such as computer service technicians and programmers.

Industry representatives told the Labor Department the regulations would disrupt merit pay scales and drive companies from federal bidding, threatening government DP capabilities. Those claims have been backed by the government's procurement agency, the General Services Administration.

Indeed, a number of DP firms have already balked at entering or extending service contracts

(Continued on Page 78)

European Data Base Mart Expected to Triple by '88

NEW YORK — The European data base market will nearly triple in size to $1.7 billion in 1988, according to a recent study conducted by Frost & Sullivan, Inc. Economic, business and financial data bases will enjoy the highest growth rates, the firm predicted.

In the past, large organizations were the primary purchasers of data base information in Europe because of the high costs involved, the 275-page report claimed. Now, however, it is the "turn of the smaller organization to recognize the value of on-line bases," the report noted.

Small users are predicted to spend up to $10,000 yearly on data base information, and such spending will stimulate a more than fourfold growth rate during the 1980s.

Breaking down projected sales between 1979 and 1988, the study predicted the special marketing information category,

(Continued on Page 78)

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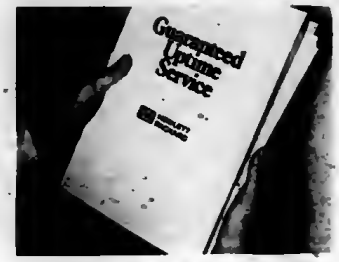

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DG Basing Management on Goals, Not Instinct

(Continued from Page 71)

business systems is unknown, but de Castro noted the reorganization of the sales force last year into three specialized industry units in part contributed to the decline in sales of these products.

However, de Castro also noted the general "anemia" in the economy played a part in DG's diminished financial performance last year. That economy continued to impact the company's first-quarter results.

As de Castro saw it, the current economy will not permit growth rates in the 30% range for the minicomputer market during 1981, although this growth is achievable in the long term.

Current Problems

Whatever the nature of DG's long-term goals, current problems continue to influence the firm's operation.

De Castro said the rapid decline in the price of the company's stock in recent weeks (from around $65 per share to $53 per share) could very well jeopardize the completion of the intended acquisition of Megatek Corp., a company DG wants to help ease its entrance into the graphics market.

Megatek, reached after de Castro's comments at the annual meeting, said it had advised DG's lawyers that the company was rescinding the merger agreement (see story on Page 75). However, de Castro said DG would pursue the computer-aided design market despite the outcome of the Megatek deal.

He also pointed out the company was interested in augmenting its low-end line by entering the market for very small business systems. Right now the company's products "are not entirely appropriate" for some of the outlets served by the recently formed General Distribution Division, which is overseeing DG's entry into retail system sales.

On a bright note, de Castro said sales of the company's recently introduced 32-bit high-end mini system, the MV/8000, have been strong, "but not sufficient to offset declines in sales of the lower range of our product families."

The company shipped its Advanced Operating System for the MV/8000 three months ahead of schedule and plans to add a Cobol compiler in the near future which will enhance the market appeal of the system "threefold."

Although DG is currently trying to setup production of this product, "there is a limit on what we can do," de Castro conceded. Right now the company is faced with a serious high inventory problem, which Kenneth V. Jaeggi, vice-president and chief financial officer, likened to "moving a mountain."

This problem stemmed from DG's announcement of price increases last year. At that time it offered customers the chance to beat the price increases by placing orders within a specific period of time. Consequently orders were very heavy at that time and production was stepped up. However, later customers canceled a large number of these orders, leaving DG with a serious inventory problem.

As for future price revisions, de Castro said he did not anticipate any change in pricing in the foreseeable future, despite IBM's recent major Series/1 product announcements, which were released by IBM on the day of DG's annual meeting.

Another negative impact on DG's earnings was the 54% increase in service revenues which "are earned at a higher relative cost than hardware sales," de Castro pointed out. "They are a contributor to lower operating margins, but essential to our customers and to us as a company."

Moreover, litigation surrounding the company's suits with Fairchild Camera & Instrument Corp. and other companies involving antitrust and trade secret issues was estimated to have cost the firm more than $5 million last year, nearly 1% of the company's revenues.

DG's First-Quarter Report

WESTBORO, Mass. — For its first quarter ended Dec. 20, Data General Corp. reported earnings of $13.8 million or $1.29 per share compared to earnings of $11.9 million or $1.15 per share in the like quarter a year ago.

However, income before an extraordinary gain of $5 million from the sale of securities totaled $8.7 million or 81 cents per share, down from earnings of $11.9 million.

Operating income was $20.5 million or 13.1% of revenues, down from $22.1 million or 16.1% of revenues in the same quarter a year ago. Revenues for the quarter were $125.4 million, up from $116.8 million in the first quarter of fiscal 1980.

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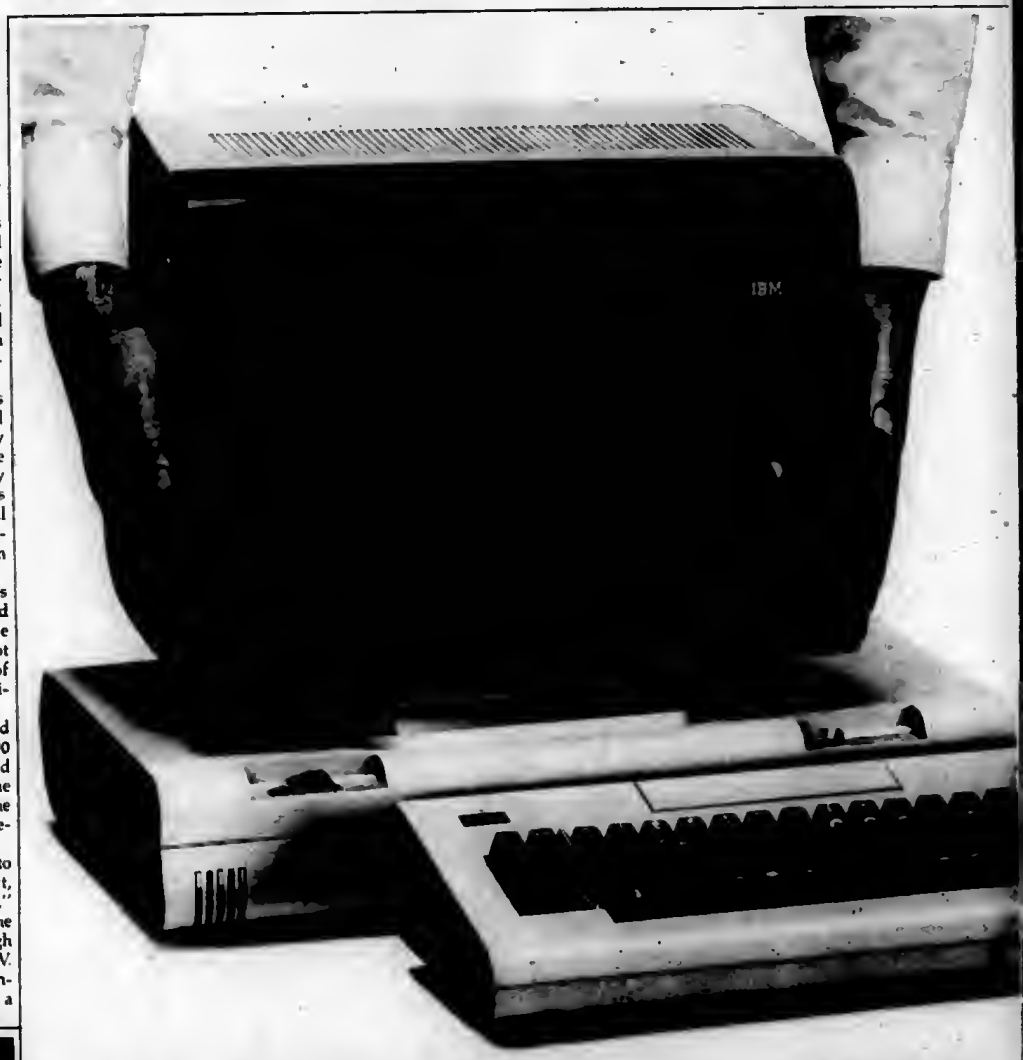

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Megatek Says No To Merger With DG

WESTBORO, Mass. — When Edson D. de Castro, president of Data General Corp., told shareholders at the company's recent annual meeting that he could not say "with any assuredness" the acquisition of Megatek Corp. would take place, DG had already received word that Megatek had rescinded the merger.

Why didn't de Castro tell this to the shareholders?

"In our mind the deal has not fallen through. Because of certain contractual agreements related to the merger, Megatek could not unilaterally terminate the agreement," said one DG spokesman.

However, executives at Megatek had notified DG's counsel on the day before the Jan. 20 annual meeting that "it would be in the best interest of the company, shareholders and employees [of Megatek] to rescind the previously announced merger activities," noted Peter J. Shaw, Megatek's vice-president.

While Megatek's move may not have been a legal termination of the agreement, it was certainly an indication to DG that Megatek, a supplier of graphics systems, was no longer interested, Shaw implied.

Shaw said the decision to terminate merger talks was not related to the plunge in DG's stock price (see story on Page 71).

Honeywell Net Rises 22%, Revenues Grow 12% in Year

MINNEAPOLIS — Honeywell, Inc.'s revenue for its computer business advanced 12.5% last year while earnings grew 22.3%.

Revenue from computer systems was $1.6 billion compared to $1.4 billion a year ago. Computer revenue accounted for 32.6% of the company's total sales of $4.9 billion, down slightly from the 33.3% it accounted for of Honeywell's 1979 revenues of $4.2 billion.

For the year, operating profits from the computer portion of the company's business totaled $186 million, up from $152 million earned in 1979. Earnings from the computer business were 35.4% of total operating earnings, compared to 31.7% last year.

Honeywell's net earnings for 1980 reached $293.5 million or $13.13 per share, up from earnings of $260.5 million or $11.89 per share in the prior fiscal year.

Total corporate revenues were $4.9 billion, up 17% from $4.2 billion in revenues in fiscal 1979. For its last quarter, total revenues reached $1.4 billion, up 10.6% from $1.2 billion in revenues in the fourth quarter of 1979. Fourth quarter earnings were $142.8 million, up from 85.1 million a year ago

Equity income accounted for $63.5 million of those earnings compared to the last fiscal year's equity income of $18.5 million. Per-share earnings for the fourth quarter were $6.36 per share, up from $3.84 per share.

Fourth-quarter earnings were positively impacted by foreign-exchange gains, equity earnings of the company's European associate, CII Honeywell Bull, and strong shipments of the DPS 8 computer systems, noted Edson Spencer, chairman and chief executive officer.

The company's information systems business should grow faster than the industry average, he added.

During 1981, Honeywell expects to spend $375 million for plant and equipment, up from $300 million spent in 1980. In addition, research and development expenditures will total $600 million, the firm said, including $240 million in customer-funded research.

Last year, the customer acquired Megadyne Corp., a manufacturer of multilayer circuit boards for large computers and started a joint venture with Sesa S.A. a Paris-based software and telecommunications company.

DEC Net Up 30% in Quarter

MAYNARD, Mass. — For its second quarter, Digital Equipment Corp. reported a 38% increase in revenues and a 30% growth in earnings.

Revenues totaled $762.3 million, up from $553.8 million in the like quarter a year ago. For its first half, DEC had revenues of $1.4 billion, compared to just over $1 billion in the first six months last fiscal year.

Earnings reached $69.9 million or $1.43 per share, compared to earnings of $52.3 million or $1.21 per share a year ago. Earnings for the six-month period were $126.1 million or $2.60 per share, up 27% from the $99 million or $2.23 per share earned in the like period a year ago.

DEC's President Kenneth H. Olsen said "both end users and original equipment manufacturers contributed to the substantial revenue gain. Our technical and commercial OEM business was strong." He also noted demand was particularly strong for the company's 32-bit systems, the VAX-11/780 and the VAX-11/750.

Despite the slowing economies in Western Europe and record interest rates in the U.S., the firm's order rates remain on plan, Olsen observed. During the quarter the company spent $77 million on plant and equipment.

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Out of the carton and into operation

When the 3101 arrives, you simply connect three modular elements – the display, the logic element and the keyboard – plug it in, position the setup switches and put it into operation. It takes just a few minutes. The 3101 weighs 38 pounds so you can move it easily.

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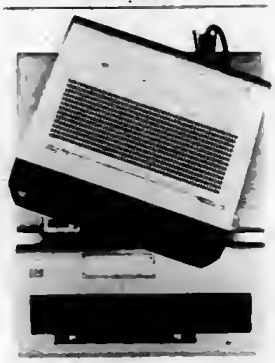
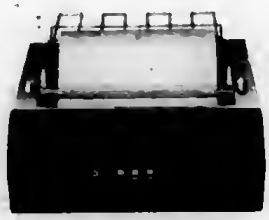


The 12-inch diagonal screen can be swiveled and tilted to cut interference from overhead lighting. It displays a maximum of 1,920 characters in 24 lines. You can select green characters on a black background or black characters on green. And there's a detachable contrast-enhancing filter.



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Burroughs Chief Hones In on 'Fatal Fascination'

(Continued from Page 71)

As a means of correcting these faults, the company established "staging centers" last December. This system, Blumenthal claimed, will assure that Burroughs will no longer ship individual components of systems to users, but rather will wait and put the entire system together before shipping it.

Moreover, Blumenthal pledged the company would no longer put a priority on shipping in a particular quarter those goods that would result in "immediate revenue" for that period — products that were purchased rather than leased.

"The first customer who orders is the first customer to get the equipment. We will treat sale and lease customers alike," Blumenthal assured.

Besides these operational shortcomings, Blumenthal also disclosed some deep-seated, long-existing flaws in the company. "The systems and procedures within the corporation were not developed to the degree necessary to run a $3 billion company," he said.

Strategic Planning

The firm did not have a strategic planning mechanism. This prompted Blumenthal to bring in late last year his long-standing ally from Bendix Corp., Jerome Jacobson, to head the company's strategic planning effort. "Too often Burroughs was a technological leader, but did not take advantage of that lead strategically," he observed.

As a result of short-sightedness, Burroughs has for a long time stressed accounting profits rather than cash and asset management, a situation Blumenthal said he is well on his way toward correcting.

In addition, the chief executive said the company's personnel policies had not been developed "commensurate with growth as a large company." Employment will grow gradually in 1981, Blumenthal said, adding there will be shifts. Those shifts will be directed to fast-growing marketing areas and service and support with a corresponding reduction in staff positions. "Burroughs has not been short on staff."

On the positive side, Blumenthal stressed as strengths the company's wide range of products, an expanding line of application software developed at seven program product centers, a strong balance sheet and order growth of 16%.

Product Announcements

For the future, Blumenthal said there would be two more product announcements in the B900 family in the foreseeable future.

However, he said the B3950 system is still on "indefinite hold," but the firm was meeting users needs with dual B2900s or with the B4800 system. "The problem with the 3950 will have no impact on the introduction of the 4900," he claimed.

Aside from the company's current product line, Blumenthal said the firm would emphasize very small business systems and minis, data communications, semiconductors for internal use and office automation.

When asked about the gaggle of lawsuits surrounding the B800 system, Blumenthal asserted they would not have a negative effect on the company and that the system had been superceded by the B900.

While the company does not presently have all the necessary requirements in place to assure a strong position in the office automation market, Blumenthal said he was not adverse to obtaining these requirements through acquisition.

Moreover, Blumenthal stressed the importance of government business to the firm and said resources previously allocated to the recently ditched scientific processor effort could be deployed to developing the government market.

Although Blumenthal hedged during much of the question and answer period — particularly in response to those questions related to what products in inventory were written down and what systems constituted the order backlog — he did note the firm would price its products aggressively and "would not be adverse to discounting."

Distributed Data Processing: Coming of Age.

Read all about it in the February 23rd issue of Computerworld.

How DDP has evolved, its present focus, and the direction it is taking will be the subject of this Special Report. We'll also cover the problems and promises of DDP the most popular "buzzword" of the 70's and a definite reality of the 80's.

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- **The change from a centralized to a decentralized system: the history behind the change and why.**
- **Security: its importance increases as traffic and networks increase. The more decentralized the system, the more open to abuse. What approaches to DDP security have users found effective, and where have supposedly fail-safe security systems failed?**
- **Management aspects of DDP: its clear that as the system grows, so do management problems. What are the solutions?**

If you're a user who watches the trends, you'll want to have the most up-to-date information about DDP and you'll find it in our February 23rd Special Report. And if you're marketing products or services in the DP field, you'll want to make sure your ad is there. Ad close is February 6th. Contact your *Computerworld* salesman, or call Frank Collins at (617) 879-0700.

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Earnings for '80 Plummet, Burroughs Takes Writeoff

DETROIT — Burroughs Corp. reported 1980 earnings of $81.9 million or $1.99 per share, down dramatically from the $305.5 million or $7.45 per share earned in 1979.

The low earnings were due to a previously announced writeoff of $125 million which accounted for a decline in per-share earnings of $3.03 [CW, Dec. 22].

Revenues for the year were $2.9 billion, compared to revenues of $2.8 billion in 1979. Revenue from rental and service increased 7% while revenue from sales decreased 1%.

Chairman and Chief Executive Officer W. Michael Blumenthal noted there would be no further writedowns and that comparisons between 1980 financial performance and that of other years were not valid. For its final quarter Burroughs revenues were $794.2 million compared to $881.6 million in the final quarter of 1979.

After the $125 million writedown in the final quarter, the company incurred a fourth quarter loss of $69.7 million or $1.66 per share, compared to net earnings of $132.4 million or $3.23 per share in the final quarter of 1979.

Writeoffs Breakdown

A breakdown of the writeoffs included:

- *$27 million after taxes* for the discontinuance of the Burroughs Scientific Processor project, the phaseout of the calculator and adding machine products, consolidation of certain manufacturing subsidiaries and the closing of small subsidiary marketing companies in Africa and Latin America.
- *$8 million after taxes* for an early retirement program for certain selected employees.
- *$70 million after taxes* for reserves for accounts receivable and inventories.
- *$5 million after taxes* for adoption of Financial Accounting Standards Board Statement 43 covering accounting for compensated absences.
- *$15 million after taxes* for other adjustments which individually are not significant.

Reports Cover Global Markets

WELLESLEY, Mass. — Venture Development Corp. (VDC) is offering six volumes of global market statistics for strategic planners and market researchers.

Venturecasts 81 contains summaries of quantitative market and forecast data published in more than 100 leading international and domestic industry information sources, compiled according to the government's Standard Industrial Classification Code.

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Each volume costs $495 from VDC at One Washington St., Wellesley, Mass. 02181.

Hanover Fair Offices Serve U.S., Canada

WHITEHOUSE, N.J. — The German Trade Fair and Exposition Corp., managers of the Hanover Trade Fairs, has opened offices in the U.S. and Canada to provide services to both exhibiting firms and visitors to Hanover Fairs.

The main office may be reached through P.O. Box 338, Whitehouse, N.J. 08888 and branch offices are located in Toronto and Chicago, the organization said.

Nickels & Dimes

Dynabyte, Inc. has received $2 million in equity and financing from a private placement and has also increased its bank lines of credit with the Bank of America to $1.4 million.

$ $ $

Tymshare, Inc. has recently completed a public offering of 750,000 shares of its common stock at $38.25 per share.

$ $ $

Time Sharing Resources, Inc. has approved a four-for-three stock split, which will increase the total number of shares from approximately 858,964 to 1,145,257.

General Datacom Industries, Inc. has filed a registration statement with the Securities and Exchange Commission for a proposed public offering of 500,000 shares of common stock.

$ $ $

Mohawk Data Sciences Corp. has filed a registration statement with the Securities and Exchange Commission covering an offering of 1.5 million shares of common stock.

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Shareholders of **Cray Research, Inc.** have approved an increase in the authorized number of common shares to 30 million from 10 million, in the form of a three-for-one stock split.

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  10 millisec access on cylinder (215K user workspace)
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  Multiple operating systems on disk
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  10 millisec access on cylinder (110K user workspace)
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Executive Corner

• Alan B. Kamman has been named to the corporate professional staff of Arthur D. Little, Inc., with responsibility for developing and coordinating international telecommunications activities.

• David Wheeler has been named senior vice-president of engineering for Magnuson Computer Systems.

• David L. Johnson has been named vice-president of sales and marketing at Vardon & Associates.

• Amdahl Corp. has announced the appointment of Raymond Sanders as a corporate vice-president; L. George Klaus as vice-president of marketing, federal region; and Bruce O. Beebe as vice-president of advanced development.

• Rudoph R. Menna has been named vice-president of marketing at Computer Transceiver Systems, Inc.

• Dr. William Davidow has been named Intel Corp.'s senior vice-president and director of corporate marketing.

• Michael D. Brody has been elected to the new position of vice-president of marketing, for Decision Data Computer Corp.

• Robert Weigel has been named vice-president of sales of Silent Partner, a computer retailer.

• Joseph T. Rodgers has joined Quantum Corp. as vice-president of finance, a newly created position in that firm.

• David C. Hallquist has been appointed manager, national services marketing, data services, for the RCA Service Co.

• Jeff Pollack has been promoted to vice-president of the southeastern sales region of Software AG of North America, Inc.

• Michael Ater, president of Michael Ater and Associates, has accepted the position of vice-president, central sales region, also for Software AG of North America, Inc.

Data Base Growth Predicted

(Continued from Page 71)

presently the European leader in spending at $282 million, will burgeon to $704 million by 1988.

Other growth, if not volume, leaders to watch over the next seven years include science and technology and economic and econometric.

The former is pegged to quadruple in spending, from $30 million to $121 million, while the forecast-oriented economic and econometric area will do even better, jumping from $58 million to $272 million.

Other growth areas cited by the report included general information, credit reference, business and finance and legal. With the exception of credit reference, all will at least quadruple in spending, the study claimed.

PTT Effect

The European postal, telephone and telegraph (PTT) authorities and their "relatively backward attitudes" have been largely responsible for opening up the continental market to U.S. innovators. The foreign entry has greatly influenced the overall market.

"The postal, telephone and telegraph authorities left the door wide open" for American-based organizations to set up their own data time-sharing networks, the study declared.

The U.S. tide is now being stemmed for two reasons: the implementation of packet switching and other new technologies and, most importantly, forthcoming revisions in European telecommunications structures by the PTTs.

"These changes will represent the single most significant factor to affect the data base industry in Europe over the next 10 years," Frost and Sullivan asserted.

On-Line Sector

Consequently, the on-line sector of the data base market will spurt ahead of the now-dominant batch-processed sector, which currently comprises 68% of total offerings. The realignment will see the on-line area take control with a 55% market share by 1988.

The on-line sector would grow even more rapidly if suppliers of credit reference and special marketing data bases could produce them in accordance with demand.

The impact of viewdata and teletext-type services was also evaluated by the report, entitled "The European Data Base Market." Teletext systems employ a 40-character screen while traditional data base operations are organized around 80-character line displays.

The firm also found that the data base supplier pays to participate in a home information system vs. free input under the common data base market approach. Despite that, viewdata and teletext-type systems "offer great potential significance to the data base industry."

The report, No. E264, may be obtained for $1,250 from Frost & Sullivan at 106 Fulton St., New York, N.Y. 10038.

Industry Loses Wage Fight

(Continued from Page 71)

with federal agencies, resulting in the shutdown or degradation of DP operations at several federal installations, government auditors said in a recent report to Congress [CW, Oct. 13].

Labor Claims

Despite those objections, Labor proceeded with the regulatory process claiming the new provisions are essential for providing white-collar workers the same salary protections enjoyed by blue-collar employees of federal service contractors.

The department said extension of the law to DP services is consistent with the legislative history of the Service Contract Act and with the department's implementation of the law over the last 15 years.

"The department has, since 1966, consistently held that the maintenance and repair of *all* types of equipment, including ADP equipment, scientific and medical apparatus, office and business machines and 'other high technology' equipment, are covered" under the Service Contract Act, Labor said.

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After Two-Quarter Decline

HP Sees Recovery Signs in U.S. Hardware Sales

By Jeffry Beeler
CW West Coast Bureau

CUPERTINO, Calif. — Domestic computer sales seem to be rising again after roughly two quarters of steady downturning, according to Hewlett-Packard Co. president John Young.

The latest falloff in U.S. computer equipment order rates apparently "bottomed out" during the third and fourth quarters of last year, and now the domestic market appears to be showing the first few signs of recovery, Young said at an HP security analysts' meeting Jan. 22.

In Europe, however, hardware sales are still slumping, and business will likely remain soft for at least a short while to come, the HP president added.

The recent dip and subsequent upturn in domestic computer order rates was reflected in miniature in HP's own 1980 hardware sales charts. Last April, after an unusually brisk start during the first quarter, HP's business activity took a sudden downward turn that extended through the summer and lasted well into the third and fourth quarters.

Since then, HP's hardware sales have been on the rebound, and thus far during the first quarter of this year, the company's revenues have been running about 10% higher than during the comparable period in 1980, Young said.

Word of Warning

News of the recent upswing in HP's hardware sales, however, was clouded somewhat by a word of economic warning from Paul Ely, vice-president and general manager of the company's Computer Groups. Ely echoed the widely expressed fear that the U.S. is heading toward another economic slowdown sometime during the first half of the current year.

Despite the threat of some troubled financial times ahead, Ely expects 1981 to be a "banner year" for HP on the product-introduction front. Sometime during the coming 11 months, the company is scheduled to announce "five or six major-scale new products" and "lots" of lesser offerings, the HP vice-president and general manager predicted.

Some of this year's expected crop of major new HP products had been originally slated for introduction during 1980, but fell victim to unspecified internal hitches that forced their announcement dates to be delayed. Partly because of the postponements, Ely said, 1980 proved to be just a so-so year for new HP product unveilings, which were highlighted by only a handful of major offerings like the Model 85 personal computer, the Model 3000 Series 44 business system and the Model 2680 laser printer.

Although Ely declined to reveal any specifics about HP's 1981 new product lineup, he did acknowledge that the company's announcements this year will be characterized by an increased emphasis on software, particularly application packages. Most, though not all, of this expected new software will come from third-party suppliers and is being sought to meet the rapidly growing demand for solutions to customer problems, Ely said.

Later during the same security analysts meeting, Young returned to the podium and reiterated what has lately become a familiar HP theme: that U.S. semiconductor makers still lag far behind their Japanese counterparts in product reliability and that domestic suppliers, for their own good, need to address the quality problem as soon as possible.

At one time, U.S. semiconductor manufacturers refused to acknowledge the superiority of Japanese chips. Recently, however, the same companies have shown a willingness to face up to the truth and remedy their product reliability shortcomings.

At one time, Young recalled, U.S. semiconductor manufacturers refused even to acknowledge the superiority of Japanese chips. Recently, however, the same companies have begun to show a new willingness to face up to the truth and take the appropriate steps to remedy their product reliability shortcomings.

Only a few months ago, many domestically produced integrated circuits suffered a five- to sixfold greater failure rate than components assembled in Japan. Today, however, the quality gap between U.S. and Japanese semiconductor parts is steadily narrowing, Young said.

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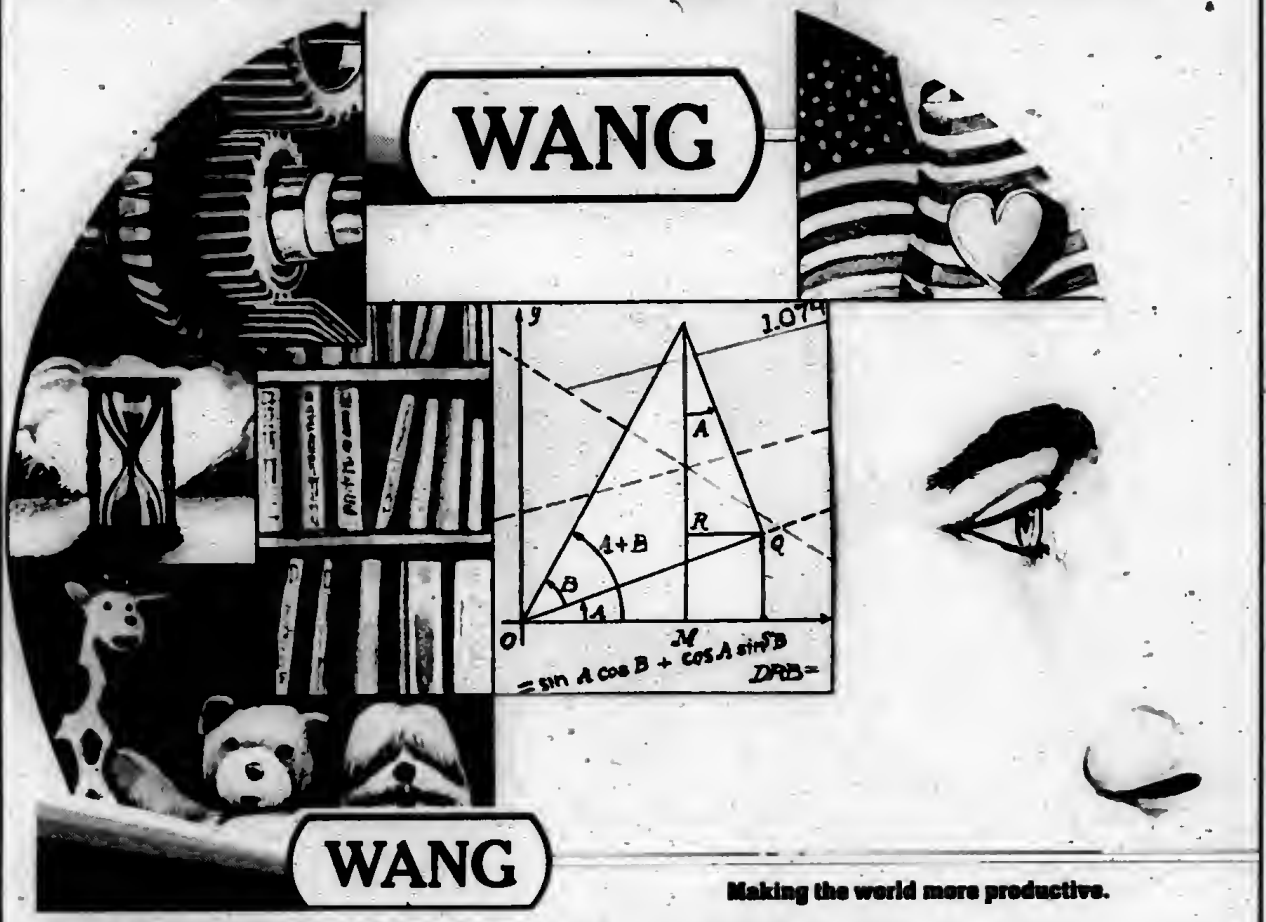

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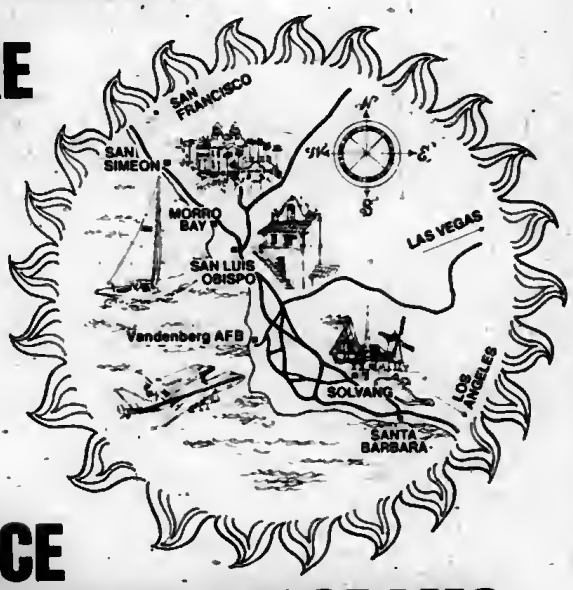

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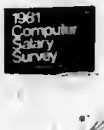

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Santee Cooper
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Director of Administrative
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PBS
Director, Computer Services

Public Broadcasting Service, a non-profit membership organization of public television stations is seeking candidates for the position of Director of Computer Services. Position requires M.S. degree in Computer Sciences or equivalent with a minimum of eight years experience in all phases of Data Processing with specific emphasis on management of programming projects and computer center. Responsible for implementation and development of long range plans and goals for the department, including budget preparation, staffing and organization. Candidates are requested to submit letter of interest with salary requirements, resume and the names of three professional references to:

Public Broadcasting Service
Attn: Carole Dickert-Schorr
Director of Personnel
475 L'Enfant Plaza West, S.W.
Washington, D.C. 20024

PBS is an Equal Opportunity/Affirmative Action Employer

INFORMATION SYSTEMS ANALYSTS

A major Company in Southeast Florida has several openings for experienced MIS Systems Development Personnel at levels thru Project Analyst. Experience in *Financial Applications* on large scale computers with *Focus, TSO,* and *Cobol* is desired. Work in a unique user-oriented service environment with excellent Company benefits. If interested send your resume to:

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capacity planning manager

FMC, one of the nation's largest industrial corporations, is presently opening a new MIS Data Center in Dallas to meet the growing needs of our divisions throughout the world. It will be linked to the present MIS Data Center in Indianapolis.

Managing the efforts of the technical staff in the areas of capacity determination, testing, modeling and performance analysis, the successful candidate will design and implement effective capacity planning/systems engineering methodologies to assure adequate capacity and configurations in both Data Centers to meet the forecasted computing needs of MIS Operations and division group MIS communities. The qualified candidate will also be responsible for the management of the extensive computer equipment backlog and hardware migration planning.

This position requires a BS in computer science, engineering, math and/or equivalent. A minimum of 8-10 years experience in related areas is necessary with 6 years directly applicable experience. Working knowledge of RMF, MICS, SAS, BEST/1 and queueing theory highly desirable.

We also have opportunities available for:

capacity planning analyst
operational planning analyst
network planning analyst
financial programmer analyst

If you are interested in getting in on the ground floor of our new MIS Operational Planning and Advanced Technology Department, please send resume, or call collect: (214) 980-1080, F.J. Fullerman, FMC Corporation, One Oaks Plaza, 6750 LBJ Freeway, Suite 1130, Dallas, Texas 75240. We are an equal opportunity employer m/f.

FMC

Transamerica Airlines, the major international airlines, is immediately expanding its DP department and has some exciting development projects for 2 Applications Programmers and 1 Systems Analyst.

Applications Programmers

Preference will be given to Programmers with at least:
- 1½ years' UNIVAC 1100 experience
- COBOL and ECL
- Structured programming concepts or DMS/1100 or TIP/1100

Systems Analyst

Preference will be given to Systems Analysts with some combination of the following experience:
- 3 years' recent systems analysis and design experience
- On-line database design (preferably UNIVAC 1100/DMS/TIP)
- Extensive user interface
- Structured analysis/design methodologies
- Programming background
- Airline applications

Transamerica Airlines employees enjoy liberal flight privileges, excellent medical and hospital plans, stock option plans, and vacation benefits. Salaries are commensurate with experience.

To apply, please send resume with salary requirements to Personnel Dept., P.O. Box 2584, Airport Station, Oakland, CA 94614.

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Transamerica Airlines

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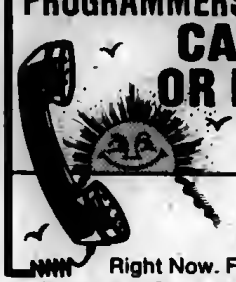

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SYSTEMS PROGRAMMER . . . . . To $26K
Mfg., IBM 370, CICS, MRP +.

PROGRAMMING MANAGER . . . . To $25K
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Please contact the F-O-R-T-U-N-E offices nearest you:

CHARLOTTE. . . . (704) 527-5610
8 Woodlawn Green, Suite 136, Charlotte, N.C. 28210

FT. LAUDERDALE . . . . (305) 764-6022
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F-O-R-T-U-N-E

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We are a Fortune 500 Company in the Retail Industry, in search of a Vice President to direct our Management Information Systems.

The successful candidate will be results oriented and have a proven strength for interfacing with top management executives. Experience in Finance, Distribution, Retail Merchandising Systems, is required. Starting salary to the mid-sixties, including a Company Paid comprehensive benefits package.

We utilize a large central computer and an extensive data communications network using mini-computers. Our environment is both challenging and progressive.

Interested applicants are urged to forward a detailed resume, including salary history, in strict confidence, to:

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Corporate office in Miami, Florida. Excellent working environment. IBM System 3, model 15D. Working experience with RPG II and CCP required. Send resume with salary history to:

Garment Corporation of America
9150 S.W. 87th Ave.
Suite 200
Miami, FL 33176
Attn: EDP
or call:
305/595-7853
(Individuals Only)

PHILADELPHIA

DP MANAGER
to 30K

Prominent Phila Corp reqs state-of-the-art degreed mdy to supv 12 in a UNIVAC 90/30 enviro. Qualified candidates will be solid in RPG II and englble in COBOL, BASIC SALES/PRODUCT ANALYSTS in an ON-LINE environ HIGH VISIBILITY spot w/top fringes. IMMED INTV.

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International Engineering Company, Inc. a rapidly expanding design and consulting engineering firm headquartered in:

San Francisco

has immediate openings in our newly created INFORMATION SYSTEMS DIVISION:

MANAGER, COMPUTER ASSISTED DESIGN SERVICES DEPARTMENT

Position includes responsibility for supervision of engineering software development and full integration of computer graphics technology into the Company's design activities. Prior DP, CAD or engineering management experience required, BS/MS in engineering/computer science.

OPERATIONS ANALYST

Provide support in planning, budgeting, computer billing system development, vendor and client contract administration and hardware investment analysis. BS in Business Administration with emphasis in Accounting or Finance and 2-5 years related experience

SYSTEM ANALYST/DATA COMMUNICATIONS

Evaluate, recommend, install and debug data communication devices for data processing, word processing and computer assisted graphic design systems. Provide support in evaluating data communication software and in the long range planning of the local network. BSEE/BSCE, with 1 plus years experience.

BUSINESS PROGRAMMER/ ANALYSTS

Positions offer immediate responsibility including development and maintenance of minicomputer and IBM 370/158 based program libraries for business and project management systems. 2-10 years experience in business systems and experience with one or more of the following: IBM JCL, MARK IV, FORTRAN, or COBOL

Overseas

openings on our
INGA-SHABA PROJECT, in ZAIRE, AFRICA

MANAGER, DATA PROCESSING DEPARTMENT

Manage & direct activities of DP Dept. including budgeting, pricing, setting rates for use of equipment (user Account), planning for software, liaison with other departments and management and development of a training program. 5-7 years DP experience, BS in computer science or business management.

SYSTEMS ENGINEER-HARDWARE

Positions require maintenance and service of HP 3000 Series II, Model 8 computer hardware, including billing and control of parts inventory. 2 plus years experience on HP 3000 Series computer.

Assignment length is 2 years; single or married status.

For immediate consideration qualified applicants should send resumes and current salary history to: Gail Miller (415) 442-7398

INTERNATIONAL ENGINEERING
A MORRISON-KNUDSEN COMPANY
180 Howard Street • San Francisco, CA 94105
An equal opportunity employer M/F

Instructor/ Assistant Professor

Needed to teach in Associate Degree Computer Science Program. B.S. Degree and appropriate professional experience acceptable, master's degree preferred. Send resume and letter of intent as soon as possible to **J. Davidson, Brookdale Community College, Lincroft, N.J. 07738.**

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UNIVERSITY OF VERMONT ANALYST PROGRAMMER I

The Administrative Computing Center is seeking an Analyst Programmer I with a Bachelor's Degree, preferably in a scientific or business related discipline. Applicants must have two to four years of experience in systems analysis and programming, two of which must be in COBOL under IBM/DOS. Applicants with experience in higher education applications, on-line systems or DBMS preferred. We offer an excellent benefits package. Salary commensurate with experience. **Send resume and 3 professional references by Feb. 5, 1981 to University of Vermont, OMIC, 236 Waterman Building, Burlington, Vermont 05405.**

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COMPUTER SERVICES MANAGER

Exchange Bank & Trust Company of Florida, a leader in Florida banking, is looking for a dynamic, successful, production-oriented professional to administer its Computer Services Department.

To qualify, this degreed professional should have a strong DOS/OS background of 5 or more years and proven people and administrative skills. Banking experience is preferred.

Responsibilities include:

- Technical support environment
- Computer operating environment
- Day-to-day user interface

We operate a multi-vendor, multi-processor environment with an extensive on-line network.

Please send resume indicating salary requirements to:

Human Resources Department
EXCHANGE BANK & TRUST COMPANY OF FLORIDA
P.O. Box 1809
Tampa, FL 33601

Exchange Bank
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DATA PROCESSING

Associated Grocers, Inc., a leading Northwest wholesale distributor has several outstanding computer science positions available.

- **PROGRAMMER/ANALYST**
- **TECHNICAL WRITER**

PROGRAMMER/ANALYSTS - We are seeking top flight programmer/analysts who are interested in excellent growth opportunities utilizing your degree or work experience to a progressive data processing department. You need a minimum of 2 years COBOL experience in an OS environment. Additional experience in CICS command-level/IDMS/IVS would be beneficial. If you have this background we are interested in talking with you about a future with our organization.

TECHNICAL WRITER - We have available an excellent opportunity for an experienced professional technical writer with a data processing background. Responsibilities will include writing and publishing documentation and instruction for use within the department and for users of data processing services. If you are capable of preparing high quality visual materials and have an ability to write clearly and concisely, this may be your opportunity for growth and development.

The above positions are available immediately with excellent salaries and an outstanding benefits program. Please send resume or contact:

Personnel Office
Associated Grocers, Inc.
3301 South Norfolk
Seattle, WA 98134

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- **SYSTEMS/PROGRAMMING MGR:** Bank IBM exp. Above Project Mgr. Level, reports to Vice President. To $35,000.
- **SYSTEMS PROGRAMMER:** DEC PDP11 software exp. using RSTS/E or RSX-11M, to $30,000.
- **SR. TECHNICAL SUPPORT:** DOS to OS/MVS conversion exp. a plus, immediate need, to $30,000.
- **SR. DATA BASE ANALYST:** IMS, DB/DC, upward mobility, Virginia, to $30,000
- **SR. EDP AUDITOR:** IBM OS/MVS exp., 40% travel, corporate NC opportunity, to $30,000 plus.
- **SYSTEMS DESIGNER:** Process control mfg. exp. using minis in Fortran, 2 openings, N.C., to $30,000+
- **TP SPECIALIST:** Network communications exp., N.C., corporate opportunity, to $30,000+
- **SYSTEMS ANALYST:** Various openings in Va., N.C., & S.C., IBM mainframes primarily, to $28,000
- **SYSTEMS PROGRAMMERS:** Need several, OS/MVS or DOS/VSE, to $27,000
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We specialize in placement of EDP Personnel throughout the SEUS with affiliate offices Nationwide as well. Confidentially write 3101 Guess Rd., Suite C, Durham, NC 27705 or call (919) 471-5404. Please include current & desired salary, geographic preference, & reason for changing positions to your cover letter.

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Northrop Services requires a Systems Analyst at NASA/Johnson Space Center, Houston, Texas to develop software systems for real-time multi-task operations including computer aided design, graphic displays and digital/analog I/O operations for analyze, diagnose problems and provide technical assistance to programmers and technicians for systems solutions. Requires a B.S. in Computer Science plus 5 years experience developing FORTRAN and Assembly language systems and preferably experience on VAX/780, H.P. and SEL Systems.

Please forward resume to **Personnel, Northrop Services, Inc. P.O. Box 34416, Houston, TX 77034. 713/486-2000.**

Equal Opportunity Employer M/F

Executive Director
Minnesota Educational Computing Consortium

Statewide computer services consortium serving all levels of Minnesota education seeks executive to manage the provision of services. Activities include maintaining and operating a state-wide timeshare system, maintaining a public school management information system, a state-wide telecommunication network and support of microcomputer instructional software serving school districts throughout the state. Leadership and skill in working with diverse educational users essential. Experience in education, data processing and computing and administration of complex projects highly desirable. Graduate level degree desirable. Salary negotiable based on experience, qualifications. Submit resume, references to Kenneth A. Berg, Chairman, Board of Directors, MECC, 3533 Broadway Drive, St. Paul, MN 55113. Application deadline April 1, 1981. Desired availability date on or before Sept. 1, 1981.

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Exciting challenge where capability outranks seniority. 2+ years interactive COBOL programming experience. Aid in development of interactive systems on DEC 20. Very well organized. Benefits include 30 days vacation. $28,000

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Excellent upper level position for sharp(ed) idea person. 4+ years systems analysis with OS COBOL in background. Responsibilities include supervision of 3 programmers working on A/R project. Converting to 4341 in March. No programming. $31,000

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Potential for significant career growth in newly installed SYSTEM 34 data center. 2+ years RPG II programming with some system 34 experience. Responsible for financial applications and supervision of operations and prog. Benefits include tuition refund and dental. $25,000

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Programmer/Analysts

Lithonia Lighting, the world's largest manufacturer of lighting products, has openings for Programmer/Analysts as follows:

MANUFACTURING Specialist with over 2 years of experience in implementing on-line manufacturing business systems such as MRP, Master Scheduling, and Shop Floor Control.

FINANCIAL Specialist with at least a year of experience in financial business applications including Costing, General Accounting and Payroll.

Here's a chance to join a fast-growing company and a dynamic team of information service professionals. All applicants should be proficient in COBOL and MVS Systems. Salary commensurate with educational background and experience.

Send resume with salary requirements to:

Personnel Department
LITHONIA LIGHTING
A Division of National Service Industries
1335 Industrial Blvd., N.W.
Conyers, Georgia 30207

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Equal Opportunity Employer M/F/V/H

Software Opportunities In Data Communications

At Racal-Milgo, we are the world's leading independent supplier of data communications equipment and we're still GROWING.

Due to continued systems development and expanding markets we have several openings for technical specialists in communications and network software.

The ideal candidate will have experience with the PDP-11 and the RSX-11M and RT-11 operating systems. Real-time Assembly language programming is required. The incumbent will be responsible for testing and documentation of software as well as on-site customer interface.

Racal-Milgo offers excellent salaries, complete company benefits including 100% paid tuition, liberal relocation policy, life/medical/dental insurance and a stimulating work environment.

Please send your resume to: **Tom Parson or call (305) 591-5904 (collect)** for details and an application.

Racal-Milgo
Racal-Milgo, Inc.
8600 N.W. 41st Street Miami, Florida 33166
Telephone (305) 592-8600

RACAL

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SENIOR SYSTEMS ANALYST
MIAMI, FLORIDA

Burger King®, a fast growing division of the Pillsbury Co. and a leader in the fast food industry, has an excellent career opportunity for a Senior Systems Analyst in our suburban Miami Corporate Headquarters. This individual will have the opportunity to supervise 2-5 programmers and analysts. The team will design, implement, and support POS and related support systems on mini, micro, and IBM-3032 hardware.

The ideal candidate should possess 5-7 years experience in programming and systems design with thorough knowledge of mini/micro operating systems. Must have developed applications software for turnkey system operation. The candidate should be knowledgeable in IBM-370 COBOL and Assembler and have supervisory experience. A minimum of 2 or more years of college or equivalent is required.

We offer excellent salaries and comprehensive benefits. For prompt, confidential consideration please send your resume to:

BURGER KING

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BURGER KING CORPORATION
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Qualified candidates must have a degree, 5-7 years' manufacturing systems experience plus knowledge of financial systems and excellent written and verbal skills.

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Requirements include 4-6 years' systems experience and a degree.

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Qualified candidate must have 3-5 years' experience in systems and programming.

PROGRAMMERS
Candidates are required to have 2-3 years' programming experience.

Hydril is conveniently located on a modern 100 acre site in Houston's rapidly growing North Belt area, 18 miles from downtown. Hydril offers competitive salaries, excellent benefits and opportunities for advancement. For immediate consideration, please send your resume and salary history to:

HYDRIL COMPANY
P.O. Box 60458, Houston, Texas 77205
(713) 449-2000 Attn: Connie Mitchell

HYDRIL

An Equal Opportunity Employer M/F

PHILADELPHIA

PROJECT LEADER
to 30K

Northwest Phil. Suburban Company requires degreed candidate w/5yrs DP and 3 yrs programming experience to work in an IBM OS/MVS environ. Qualified individuals will know COBOL/JCL MFG & FIN'L APPLICATIONS and be a strong communicator. This position requires DATA BASE/DDP/ON-LINE experience. Good fringes. Great growth potential. IMMED INTV

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CONTACT: Bob Greenberg

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Fortune 500 company has an immediate need for a Systems Programmer in its corporate computer facility located in the sunbelt. Position requires programming expertise in at least 2 languages including Univac 1100 Assembler, a high level language and a thorough working knowledge of the internals of OS-1100. A minimum of 2 years experience with OS1100 system generation is required. Salary is commensurate with ability and experience. Please send resume including salary requirements to

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Framingham, MA 01701

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Insurance management firm is seeking experienced candidates with IBM DOS/VSE, ICCS, and Property & Casualty Insurance background. We offer competitive salaries, full benefit package, relaxed atmosphere and an expanding environment. Please send resume and salary history to:

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Immediate opening NCR Computer. Neat 3 language. Minimum two years experience programming. Financial experience preferred. Excellent benefits. Salary negotiable. Please send resume to **City National Bank, P.O. Box 47, Fort Smith, Arkansas 72901.** An Equal Opportunity Employer.

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Programmer Analysts • Data Base Management Specialists

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Work on today's most advanced business systems using state of the art UNIVAC 1100 hardware. Learn DMS 1100 and transaction processing. For exceptional professional growth opportunities, this is the right time to make your career move.

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Our client prefers candidates to have a degree and two years experience with UNIVAC 1100 Series and COBOL. Three years applicable experience may be accepted in lieu of a degree. U.S. Citizenship required. If this opportunity sounds too good to be true, check it out! Call COLLECT 9AM 9PM daily 703/356 1997 or 703/356 0620. Or send your resume to: Tink Nathan, Technical Recruiter, P.O. Box NN, McLean, VA 22101

Representing Equal Opportunity Employers

Systems Programmer

West Coast Grocery Company, a leading Pacific Northwest wholesaler, is seeking a Systems Programmer to provide systems support for the Burroughs 6900.

Candidate must have experience in system design and programming with Burroughs Large Systems, be proficient in use of standard ANSI COBOL using structured methodologies, and have experience with all systems software including MCP, compilers, data base, and on-line systems.

Salary is negotiable with excellent company benefits including profit sharing. Please send resume to **West Coast Grocery Company, Human Resources Department, P.O. Box 2237, Tacoma, WA 98401.** For more information call **Linda Carlson at (206) 593-5873.** Minority applicants shall be considered on the same basis as non-minority applicants without regard to race.

WEST COAST GROCERY CO.

Pacific Northwest

PORTLAND

SR. PROGRAMMER ANALYST .... To $32K
Portland firm requires 2 senior level technicians immediately. Their skills must include in-depth knowledge of on-line systems in an OS/MVS environment. They must be accomplished in both BAL and COBOL. DL/1 would be a plus. This very progressive company is prepared to provide rapid growth and excellent benefits to the right individuals.

OS SYSTEM PROGRAMMER .... (Alaska) .... To $40K
Alaskan employer is seeking an individual to assume responsibility for their OS/MVS Operating System. Interested candidates must be strong technically, able to "take charge" and work independently. Complete relocation provided. Tax incentives, interest rates and other benefits are part of this attractive package. Employer is only asking for a minimum 18 month commitment, although permanent relocation is desirable. Sr. level position in communications (SNA) also available.

SKIP STRADLEY **TERRY KASH**
200 S.W. Market St., Suite #1078, Portland, OR 97201
(503) 243-1010

SEATTLE

SR. PROGRAM ANALYST .... To $30K
Large corporation involved in major development for both corporate and remote sites requires a senior individual with CICS & large mainframe exp. You will work with a professional team using structured design & prog. methods. 3+ years exp. required. Excellent visibility and advancement opportunities.

MINI COMPUTER SPECIALIST .... To $28K
Participate in major development projects for a large N.W. Company. Should have 3+ years experience with Mini s — both stand alone & tied to large mainframes. Responsibilities include design, prog. & consulting with both business & technical users. Micro-data & HP3000 experience a +

JIM KLASSEN **JUDY HEYDRICK**
310-108th Ave., N.E. #510, Bellevue, WA 98004
(206) 455-8300

Foote-Waldron

Research Engineer/Research Programmer To Manage Computer Operations at A Major University Research Laboratory

Research Engineer/Research Programmer to MANAGE COMPUTER OPERATIONS. Must have a B.S. Degree in Electrical Engineering, Computer Science, or a related scientific field and should possess in depth knowledge of operating systems and computer hardware. Operating experience with DEC System 10 and/or VAX Computers involving both hardware and software is highly desirable. Experience in supervision is desired.

Management responsibilities will include the day to day operation of a computer facility including a DEC System 10, VAX, Burroughs 1900, and several small computers. Ability to interact effectively with a broad spectrum of users, vendors and staff is essential.

Position is academic/professional in the category of research engineer/research programmer and is available immediately. The salary range is $15,000-$24,000 depending on the candidates qualifications. In order to assure full consideration, applications must be received by Feb. 16, 1981.

Interested persons should contact and send complete resumes to **L.F. Selander, Coordinated Science Laboratory, University of Illinois, Urbana, Ill. 61801 217/333-2815.**

The University of Illinois is an affirmative action/equal opportunity employer.

COMPUTERWORLD

Sr. Applications Specialist CICS/DL1

The Potomac Electric Power Co., in Washington, D.C. has an immediate need for a Sr. Applications Specialist in our on-line computer systems area. The successful candidate will serve as an in-house consultant for applications programmers developing a materials management information system. Three years of CICS/DL1 experience required including

CICS Security
CICS Back-Up and Recovery
CICS Performance Tuning
CICS Internals

PEPCO offers excellent starting salary and a comprehensive benefit package including tuition aid. Interested applicants may submit resumes with salary requirements to

Laurie Landesberg
Potomac Electric Power Co.
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Washington, DC 20068

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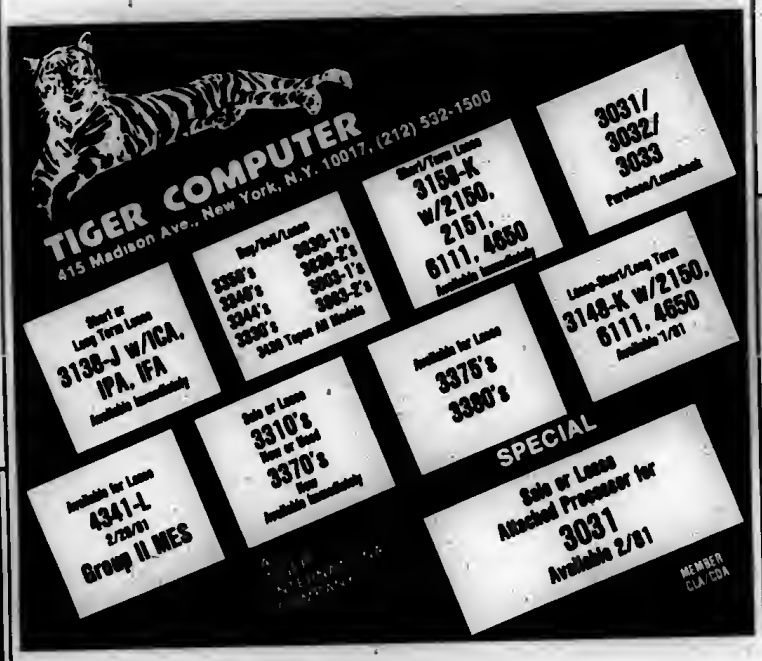

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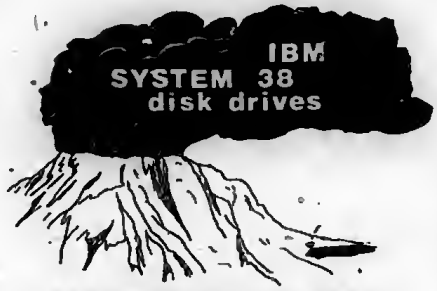

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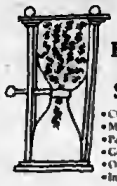

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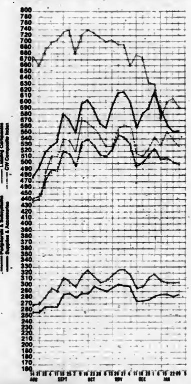

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Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, JANUARY 28, 1981

All statistics compiled, computed and formatted by TRADE QUOTES, INC. Cambridge, Mass. 02139

EXCH		1980-81 RANGE (1)	CLOSE JAN 28 1981	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
A	AMDAHL CORP	15- 42	28 3/4	+ 3/4	+3.8
N	BURROUGHS CORP	47- 88	50 3/8	+2	+4.1
O	COMPUTER AUTOMATION	6- 27	17	+2	+13.3
N	CONTROL DATA CORP	35- 77	64 7/8	- 3/8	-0.3
O	CRAY RESEARCH INC	10- 48	38 5/8	-3 1/4	-8.1
N	DATA GENERAL CORP	46- 87	84 5/8	-1 3/8	-2.8
N	DATAPOINT CORP	44-118	103 3/4	+3 1/4	+3.2
N	DIGITAL EQUIPMENT	62- 88	87	+2 3/8	+2.8
A	EECO INC	6- 17	18	- 1/8	-0.8
N	ELECTRONIC ASSOC.	6- 12	7 1/4	- 1/4	-3.3
N	FOUR-PHASE SYSTEMS	20- 48	21 5/8	- 1/2	-2.3
N	FOXBORO	31- 38	48 7/8	-2 1/8	-4.1
O	GENERAL AUTOMATION	7- 18	8 1/4	+ 3/8	+4.2
O	DAI COMPUTER CORP	1- 3	1 1/2	0	0.0
N	HEWLETT-PACKARD CO	46- 99	83 1/4	-4	+5.0
N	HONEYWELL INC	65-113	103	+1 7/8	+1.8
N	IBM	50- 79	64 5/8	- 1/2	-0.7
O	MAGNUSON COMP SYSTS	20- 46	36 3/4	- 1/4	-0.6
N	MANAGEMENT ASSIST	9- 25	13 7/8	- 1/8	-0.8
O	MINI-COMPUTER SYST	1- 6	1 5/8	- 1/4	-13.3
O	MODULAR COMPUTER SYS	9- 31	18 3/4	- 1/4	-1.6
N	NCR	32- 82	61 3/4	-1 7/8	-3.6
N	PRIME COMPUTER INC	10- 41	35 5/8	+1 1/4	+3.8
N	PERKIN-ELMER	10- 35	30 3/4	+1 3/8	+4.6
N	SPERRY CORP	42- 65	58 3/4	-1 1/4	-2.1
O	TANDEM COMPUTERS INC	13- 78	68 1/4	+3 3/4	+5.7
N	TEXAS INSTRUMENTS	79-130	112 7/8	- 7/8	-0.7
N	WANG LABS.	17- 60	35 1/8	+ 5/8	+1.7
	LEASING COMPANIES				
N	BOOTHE FINANCIAL CP	13- 27	18 1/2	- 1/4	-1.3
N	COMDISCO INC	6- 24	18 7/8	+1 1/2	+8.1
A	COMMERCE GROUP CORP	1- 2	3/4	- 1/8	-14.2
A	COMPUTER INVSTRS GRP	0- 4	1/4	0	0.0
N	CONTINENTAL INFO SYS	2- 16	4 1/4	+ 1/4	+6.2
N	DATRONIC RENTAL	3- 3	4 1/2	0	0.0
A	DCL INC	3- 6	2 5/8	0	0.0
N	GPF INC	5- 12	6 1/4	+ 1/4	+4.1
O	ITEL	1- 16	3/8	0	0.0
O	LEASPAC CORP	1- 2	3/8	- 1/4	-40.0
A	PIONEER TEX CORP	2- 4	3 5/8	0	0.0
N	RELIANCE GROUP INC	34- 78	67 7/8	- 3/8	-0.5
N	U.S. LEASING	12- 28	28 3/4	+ 7/8	+3.3

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
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EXCH		1980-81 RANGE (1)	CLOSE JAN 28 1981	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 6	4 7/8	- 1/8	-3.6
O	ADVANCED SYSTEMS INC	12- 19	13 3/4	+ 1/4	+1.8
O	ANACOMP INC	7- 24	18 3/8	+ 3/8	+2.0
O	ANALYSTS INTL CORP	3- 14	8 7/8	+ 3/8	+4.4
A	APPLIED DATA RES.	5- 24	18	- 1/8	-0.8
N	AUTOMATIC DATA PROC	31- 52	47 1/2	+ 1/2	+1.0
O	CGA COMPUTER ASSOC	9- 17	13	- 1/4	-1.8
O	COMPUTER HORIZONS	1- 5	2 3/8	- 1/8	-5.0
O	COMPUTER NETWORK	4- 8	6 7/8	- 5/8	-8.0
N	COMPUTER SCIENCES	11- 30	20 3/8	- 3/8	-2.8
N	COMPUTER TASK GROUP	1- 23	17	-2 1/2	-12.8
O	COMPUTER USAGE	2- 10	6 1/4	0	0.0
O	COMPUT AUTO REP SVC	4- 11	7 1/8	- 3/8	-5.0
O	COMSHARE	11- 21	14 1/4	- 1/4	-1.7
O	CULLINANE DATABASE	18- 65	33 1/4	- 3/4	-2.2
O	DATA DIMENSIONS INC	1- 6	1 1/4	- 1/8	-9.0
O	DATATAB	1- 4	1	- 1/8	-11.1
O	DBI CORP	4- 8	3 7/8	- 3/8	-8.8
N	ELECTRONIC DATA SYST	18- 38	36 3/8	+ 1/8	+0.3
O	INFORMATICS INC	8- 29	22 1/2	- 1/2	-2.1
O	INSYTE CORP	1- 3	2 3/4	- 3/8	-12.0
O	IPS COMPUTER MARKET.	1- 4	1	0	0.0
O	KEANE ASSOCIATES	3- 8	3 1/2	+ 1/4	4.3
O	KEYDATA CORP	1- 5	1 1/8	0	0.0
A	LOGICON	12- 30	27 3/8	+1 1/4	+4.7
O	MATHEMATICA INC	3- 18	12 3/4	-1	-7.2
O	MATHEMATICAL APP GRP	7- 33	18 1/2	+ 1/2	+2.8
O	NATIONAL DATA CORP	10- 38	34 3/4	- 3/8	-1.0
N	PLANNING RESEARCH	3- 13	7 1/8	- 1/8	-1.7
O	PROGRAMMING & SYS	1- 1	1	+ 1/8	+14.2
O	RAPIDATA INC	4- 11	8 3/8	- 3/8	-4.2
O	REYNOLDS & REYNOLDS	20- 34	20 1/2	- 1/2	-2.3
O	STSC INC	8- 28	22 1/2	+ 1/4	+1.1
O	SCIENTIFIC COMPUTERS	8- 17	12 1/4	- 1/2	-3.8
N	TYMSHARE INC	17- 70	43	- 3/4	-1.7
A	URS CORP	5- 17	13 7/8	- 3/8	-2.6
N	WYLY CORP	6- 20	13 7/8	+ 1/8	+0.8
	PERIPHERALS & SUBSYSTEMS				
N	AM INTERNATIONAL	13- 24	13 1/2	- 1/4	-1.8
A	ANDERSON JACOBSON	9- 25	16 5/8	-1 3/8	-7.6
O	AUTO-TROL TECHNOLOGY	18- 62	38 1/2	+2	+5.4
O	BEEHIVE INT'L	3- 38	29 1/2	- 3/4	-2.4
A	BOLT, BERANEK & NEW	12- 37	32 1/8	- 1/2	-1.5
N	BUNKER RAMO	17- 41	40 1/4	+ 1/2	+7.2
O	CAMBRIDGE MEMORIES	1- 9	2 1/2	- 1/8	-4.7
O	CENTRONICS DATA COMP	18- 55	21 3/8	+1 1/8	+5.5
A	CETEC CORP	3- 8	7 1/2	- 1/8	-1.6
O	COMPUTER DEVICES INC	6- 10	8 1/8	- 1/2	-5.1
O	COGNITRONICS	1- 10	8 3/4	+ 3/4	+8.3
O	COMPUTER COMMUN.	4- 10	2 1/8	+ 1/8	+6.2
O	COMPUTER CONSOLES	4- 29	20 1/2	- 1/2	-2.8
O	COMPUTER TRANSCEIVER	1- 6	1 1/4	0	0.0
N	COMPUTERVISION CORP	24- 92	71	- 1/2	-0.6
N	CONRAC CORP	13- 25	18 3/8	+ 5/8	+3.3

EXCH		1980-81 RANGE (1)	CLOSE JAN 28 1981	WEEK NET CHNGE	WEEK PCT CHNGE
A	DATA ACCESS SYSTEMS	8- 23	18 1/4	- 5/8	-3.3
A	DATAPRODUCTS CORP	11- 38	35 1/2	+2 1/2	+7.5
O	DATUM INC	7- 8	3 3/8	- 1/4	-6.8
O	DECISION DATA COMPUT	3- 6	4 3/8	0	0.0
O	DELTA DATA SYSTEMS	1- 3	1 7/8	0	0.0
O	DATARAM CORP	8- 37	8 7/8	- 3/8	-3.8
O	ELECTRONIC M & M	3- 8	6 1/8	- 1/2	-7.5
O	EVANS & SUTHERLAND	21- 83	81 1/2	-1	-1.5
O	FABRI-TEK	1- 4	2 7/8	+ 1/8	+4.3
O	GENERAL COMPUTER SYS	1- 11	10	+1	+11.1
O	GEN'L DATA COMM IND	8- 22	17 1/4	- 1/4	-1.4
O	GENERAL TERMINAL CP	1- 8	1 5/8	0	0.0
N	HAZELTINE CORP	12- 33	24 1/4	0	0.0
N	HARRIS CORP	29- 55	47 5/8	-2 1/2	-4.8
O	INFORMATION INTL INC	8- 15	10 1/4	- 3/4	-6.8
O	ISTEL CORP	23- 58	38	- 1/2	-1.2
O	INTERSIL	13- 36	34 1/4	+ 1/4	+0.7
A	LUNDY ELECTRONICS	4- 17	11 1/4	+ 1/8	+1.1
O	MAI DATA CORP	5- 18	14 1/8	+1	+7.6
N	MEMOREX	10- 34	18 5/8	- 1/8	-1.1
N	MOHAWK DATA SCI	10- 31	20 3/8	-1 5/8	-7.3
O	ONYX	2- 12	10	0	0.0
A	PARADYNE CORP	9- 37	35 1/2	+1 1/2	+4.4
A	PENRIL CORP	8- 18	12 7/8	- 1/4	-1.8
O	QANTEX CORP	10- 23	18 3/4	+ 1/4	+1.3
N	RECOGNITION EQUIP	[illegible]	14	+ 1/8	+0.9
O	SCAN DATA	1- 8	2	+ [illegible]	+3.1
N	STORAGE TECHNOLOGY	12- 26	18 3/4	- 3/8	-1.8
O	SYKES DATATRONICS	14- 50	29	0	0.0
O	T BAR INC	14- 24	19 1/2	+1 1/4	+6.8
A	TEC INC	3- 9	4 3/4	- 3/8	-7.3
N	TEKTRONIX INC	42- 70	58 3/4	+ 7/8	+1.5
N	TELEX	3- 6	6	+ 3/8	+6.1
O	TESDATA SYSTEMS CP	8- 28	10 1/2	- 1/8	-1.1
A	TIMEPLEX INC	6- 22	13 1/4	- 3/4	-5.3
O	WILTEK INC	1- 3	2 3/8	0	0.0
	SUPPLIES & ACCESSORIES				
A	AMERICAN BUS PRODS	6- 17	14	+ 1/4	+1.8
O	BALTIMORE BUS FORMS	1- 2	1/2	0	0.0
N	BARRY WRIGHT	6- 22	18 5/4	+ 3/4	+4.1
N	CYBERMATICS INC	1- 2	1	0	0.0
A	DUPLEX PRODUCTS INC	11- 18	43 1/2	- 1/8	-0.8
N	ENNIS BUS. FORMS	13- 21	15 1/2	- 1/2	-3.1
N	3M COMPANY	48- 63	58 3/4	- 5/8	-1.0
O	MOORE CORP LTD	27- 37	34	+ 3/8	+1.1
N	NASHUA CORP	20- 39	25 1/2	- 5/8	-2.3
N	STANDARD REGISTER	22- 35	32 1/4	+ 1/2	+1.5
A	TAB PRODUCTS CO	8- 38	22 1/8	+1 3/4	+8.5
N	WABASH MAGNETICS	11- 31	30 1/4	0	0.0
N	WALLACE BUS FORMS	12- 28	25 1/8	+1 1/8	+4.8

SMALLER. SMOOTHER. FASTER. FINER. STRONGER. THINNER. TOUGHER.

THOSE words are not mere product boasts. They describe, instead, the relentless realities of doing business in the marketplaces of high technology. Marketplaces with insatiable appetites for ever-smaller sizes, smoother surfaces, closer tolerances, faster accesses, greater capacities. Marketplaces with their own uncompromising process of natural selection.

Memorex® Corporation has been part of that environment since 1961. For 20 years, we have helped to shape the information recording, storage and retrieval industry. For 20 years, we have expanded our product lines to include everything from disc packs to disc drives, from word processing supplies to communications terminals. And for 20 years, in an environment where change is the constant—and an unsympathetic, ever-accelerating constant at that—Memorex Corporation has done more than simply manage to change so as to keep up. We have *managed change itself* and stayed ahead.

And since ahead is where we intend to stay, we are taking those mandates for smaller, smoother, faster, and the rest and making of them points of pride, "expressions of excellence." Certainly, the accomplishments our people have made possible these past 20 years are noteworthy. And if we are not dwelling on them, it is because excellence, like change itself, moves in only one direction.

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